

ANALYSIS OF EQUALITY OF EDUCATIONAL OPPORTUNITY  
AND TAXPAYER EQUITY THROUGH THE MODELING AND TESTING  
OF A COMPUTER BASED PUBLIC SCHOOL  
FINANCE SIMULATION FOR A SELECTED STATE

By

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Abstract of Dissertation Presented to the Graduate Council  
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The primary objectives of this study were to (1) identify and collect data necessary to generate alternative funding patterns for public school finance, (2) to develop computational subroutines and decision sets in a computer simulation model that would provide alternative funding patterns, and (3) to simulate and evaluate alternative funding patterns relative to the concepts of equal educational opportunity and taxpayer equity. These three objectives were then applied to the state of West Virginia.

The National Education Finance Project (NEFP) originally developed a computer simulation which was designed to simulate the effects of decisions for a prototype state. This simulation consisted of two main data files, which were identified as M FILE and D FILE. The M FILE was additionally subdivided into a B FILE and C FILE. Basic informational data about the school districts, such as demographic,



enrollment, program, salaries, et cetera, are contained in the D FILE; whereas, the C FILE stored results of computations for later retrieval. D FILE contained the alternative decision sets available to the user in regard to programs, distribution, and revenue decisions. Three additional files were created in the simulation, and are designated as LSTATE, SSTATE, and STATE. These three files were the key elements of the simulation in that they enabled the interaction of the input decisions relative to the base data. For purposes of this study, the STATE file was created, and computational subroutines relative to both general school finance and the state of West Virginia were written and stored in this file. Additional options included a comparisons section between the alternative selected and the 1976-1977 state plan, and a Lorenz Curve and Gini Index to enable further analysis of equity.

Although the analysis of data was place specific, West Virginia, the procedures employed are generalizable to any state. Analysis of data was accomplished in four parts. First, the 1976-1977 state plan was analyzed relative to the concepts of equality of educational opportunity and taxpayer equity. The results indicated that the 1976-1977 state aid formula showed a high correlation between the amount of money available to a district and

the number of professional educators employed in a district. This factor was significant considering the state allocations are based on professional educator salaries. Wealthy districts thus tend to have more professional educators per student, and subsequently receive more state aid than poorer districts. Likewise, the composition of the general fund indicated a heavy reliance on tax sources which place a greater burden on low-income groups.

The second part of the analysis demonstrated the convergence of foundation, percentage equalizing, and guaranteed yield programs when one considers only dollar allocations in regard to equity, which is referred to as vertical equity. In part three, concern for student needs (horizontal equity) was provided for in a weighted foundation program. The level of funding utilized remained constant throughout, to illustrate redistributational effects of state aid. The results indicated that a basic program can fulfill both the requirements of vertical and horizontal equity, and thus meet equality of educational opportunity criteria. Finally, the fourth part analyzed the 1975-1976 general revenue fund relative to the criteria of taxpayer equity. Using the NEFP tax progressivity index, results indicated a tax base which appeared to place a greater burden on low income groups. An alternative was generated which produced a higher progressivity measure.

A simulation provides the necessary analytical tool which enables experimentation on a system without incurring the risks of direct experimentation. The examples cited were representative of the capabilities of the adapted simulation model, and demonstrate the potential use by researchers, planners, and managers connected with educational finance.

## CHAPTER I

### INTRODUCTION

#### Background and Rationale

Equality is a concept which the United States has expressed as one of the basic principles upon which this country was founded. The Preamble to the Constitution is illustrative of this point when it stated, "We hold these truths to be self-evident, that all men are created equal." The idea still endures, with President Carter declaring that one of the issues about which his administration is concerned deeply is the issue of "human rights."

However noble an idea, the implementation of such an ideal as equality has had its limitations. Throughout history equality has been defined and applied differentially, depending upon who was defining and applying the concept to whom. Because of this problem, legislatures (federal and state) have attempted to be more specific in their intent, with the ultimate objective being that through a combination of all the pieces of legislation, a more general interpretation of the concept of equality could be derived. However, the courts, being the main interpreters

of legislation, have encountered the same definitional problem of equality as have legislatures.

Some have suggested that through education, equality is an obtainable goal. This hope is due to the fact that these same people believe that it is through expanded educational opportunities that a degree of equality will be achieved. But, as with most general terms, the concepts of equality and educational opportunity seemed to confound the definitional problems already encountered. Given that school districts provide different educational programs and fiscally support education at various levels, the controversy of what constitutes equality in education has evolved to a point where fiscal policies seem to be the focus of legislators, courts, and educators.

Laws, policies, and procedures for the assessment, collection, and distribution of revenues to support public education have been a major issue facing legislatures, courts, educators, and citizens. The ultimate end of which is to provide for equality of educational opportunity, which McCarthy (1977) has characterized as being "firmly rooted in democratic philosophy and shares an exalted position with monogamy, brotherhood, and peace" (p. 159).

Public education exists, as the term implies, to serve society and for the benefit of society. Thus, being a merit want of society, it should be reflective of the

needs and goals for the society in which it exists. To facilitate this end, adequate revenues must be provided to finance public education and to meet the goal of equality of educational opportunity.

The concept of fiscal equality, although easy to state, is in fact a complex and dynamic concept. McClure (1975) suggested that educational equality means "that every individual should be able to develop to fullest capacity, given reasonable effort and motivation, and to continue in ways that enable her or him to perform as effectively as possible" (p. 102). By this and similar definitions by others, the concept evolves as fiscal equity rather than fiscal equality.

The delineation between the two concepts, equality and equity, being that equality implies uniformity of support (or service), whereas equity implies differential support (or service) based upon need. Alexander (1977) expanded upon the concept of equity when he defined it as generally consisting of at least three aspects—"equality, utility, and efficiency" (p. 453).

Simple horizontal equality is referred to by economists as treating equals, equally. But, due to its broad interpretation, equals and equality have become relative terms. This same drawback of interpretation is also encountered when one considers the concept of utility. If taxpayers

receive a maximum return for their investment, and they continue to receive that maximum, then equality occurs. But, the economic principal of marginal utility suggests that the value placed upon those returns has differential utility, and therefore the degree of utility applies. Efficiency on the other hand addresses itself to a "balanced and comprehensive taxing structure covering all major forms of activity without falling exclusively on one particular aspect of the economic system" (Alexander, 1977, p. 455).

Since equality is a goal of public school finance practice, R. L. Johns (1977) stated the general criteria for judging achievement thereof as,

- (1) The finance program should result in substantial equalization throughout the state.
- (2) The program should be fiscally neutral; the quality and quantity of a child's education should not be dependent on per capita wealth of the school district in which he lives.
- (3) The program should be financed by an equitable system of taxation.
- (4) The program should promote the efficient use of school funds. (p. 499)

Meeting the criteria as mentioned by Johns (1977) had been the objectives of state legislatures, courts, educators, and the lay public, but it has often been a "patch-work" or "piece-meal" approach. The emphasis to correct inequities within state formulas has been accomplished through "add-ons" to the current formula, or by raising funding levels within the existing formula. The result of the corrections has been general confusion on the

part of legislators, educators, and citizens as to what the end result means to individual school districts.

Hale (1975) addressed the equity of state financial plans for education in terms of distributional equity and taxpayer equity. Distributional equity is concerned with the allocation phase of school finance in regard to testing the equity of "equal access to resources based upon need," whereas taxpayer equity is concerned with the revenue dimension in regard to testing the equity concept of "equal treatment-of-equals who have the ability to pay" (Hale, 1975, p. 22). But, as Tanner and Kondwros (1977) stated, the problems of "enormous growth in expenditures" over revenues and the inability of local governments to generate enough revenues have generally prevented both quality education and equality of education.

Tanner and Kondwros (1977) stated five reasons why current state aid formulas appear to be inadequate. They first concluded that variations in the tax bases, assessment procedures and tax rates make a heavy reliance on the property tax which they further concluded was an inadequate source of funding. Second, flat grant provisions within many state formulas help in maintaining discrepancies. Third, variations for cost-of-living and delivery systems are seldom considered in present formulas. Fourth, equalizing formulas that are based on property wealth "frequently



do not correlate with individual income" (Tanner & Kondwros, 1977, p. 2), and this is a crucial relationship in the ability of a school district to generate revenue.

Fifth, present formulas do not take into account high cost programs necessary to meet the needs of various children.

To deal with equalization of educational opportunity and taxpayer equity issues in a comprehensive study of school finance requires the use of the most efficient tool available to show the impact of policy decisions, and to allow for analysis of alternatives. Through the use of a computer simulation researchers and planners can quickly and accurately answer questions in regard to the impact of proposed plans on individual school districts (Johns, 1977, p. 508).

It is within the computer-based simulation that program decisions, distributional decisions, and revenue decisions can be analyzed in relationship to a state as a whole. The simulation model provides the needed planning, management, and research tool for school finance policy-makers and policy-managers.

School finance specialists and researchers have suggested that almost all state-local public school support programs in use throughout the United States essentially are the same, with the variation being within the definition of terms used (Johns, 1968). These variations in definitions

actually determine the degree of equality of educational opportunity contained in the state plan. One focus of this study was to determine the variation from equalization of several alternative public school finance plans through the use of a computer model adapted for that purpose.

### Statement of the Problem

The focus of this study was to adapt and test a computer-based school finance simulation model that would provide computational subroutines to generate alternative sets of program and fiscal decisions. The problem was to generate alternative sets of public school finance program and fiscal decisions and demonstrate their respective contribution to equalization of educational opportunity and taxpayer equity. The specific aspects of the problem were

1. Identification of the data elements necessary to generate alternative funding patterns for various public school support formulae.
2. To develop calculation subroutines and decision sets necessary to simulate various public school funding patterns.
3. To simulate four alternative funding patterns and to evaluate the results relative to generally accepted criteria of equalization of educational opportunity and taxpayer equity.

### Procedures

The general procedures for this study were conducted in three phases:

1. Data were identified and collected which enabled production of program and fiscal decisions relative to alternative school finance funding plans.
  2. Calculation and decision subroutines were developed which enabled alternative patterns of school finance to be modeled.
  3. Analysis of the alternative school funding plans in regard to both equalization of educational opportunity and taxpayer equity criteria.
- 1 - Data were identified and collected which enabled production of the program and fiscal decisions relative to alternative school finance funding plans.

Since West Virginia school finance programs are based on student and teacher data of the previous year, data were available to duplicate the 1976-1977 funding plan.

Programmatically, for the purposes of this study, the decision was made to generate alternative funding patterns based on kindergarten, elementary, secondary, special education (for 10 exceptionalities or maladies or 4 delivery systems, using full time equivalency enrollment) and vocational education (for eight categories, using full time equivalency enrollment). Additional programmatic data used

included salaries of professional educators, special services and modifying factors, and fiscal data relative to both state and local revenue and wealth.

Data collection was limited to information that was obtainable at the state level. The State Department of Education, State Department of Transportation, and State Tax Collectors Office were the prime sources of information regarding local school districts.

- 2 - Calculation and decision subroutines were developed which enabled alternative patterns of school finance to be modeled.

Following collection of data necessary to simulate the alternative patterns of school finance, a decision manual was developed to provide researchers and planners options as to programs, allocations, and to sources of revenue. Then by modification of the National Education Finance Project simulation, calculational subroutines were developed to enable execution of the desired decisions.

- 3 - Analysis of the alternative school funding plans in regard to both equalization of educational opportunity and taxpayer equity criteria.

Foundation plan, percentage equalization plan, and guaranteed yield plan were decided as the basic options that were utilized in the model for analysis. Equalization of educational opportunity and taxpayer equity criteria were applied to each, and served as the basis for analysis.

### Delimitations

1. The study was limited to the state of West Virginia.
2. Enrollment figures used were based on a full time equivalency basis.
3. Analysis was limited to generalized funding patterns (foundation plan, percentage equalizing plan, and guaranteed yield).
4. Programmatic data and fiscal data were obtained that reflected the 1976-1977 basis of support for public schools. However, data for the base year that was unavailable were substituted by 1975-1976 data.

### Limitations

Through the use of computer simulations, state planners and researchers can analyze the equalization effects of various alternative patterns of school finance funding strategies. Though the study was limited to the state of West Virginia, generalizations may be inferred to other states if similar data and structure exists.

### Definition of Terms

Actual costs. Actual costs were used for the purposes of this study to denote total expenditures incurred for the specific category referenced.

Approved costs. Approved costs for the purposes of this study were used to denote approved allocations by the state for the specific category referenced.

Delivery system. Delivery system for the purposes of this study were used to denote a specific modality of instruction within the special education program.

Distributional decisions. Distributional decisions for the purposes of this study were used to refer to the total state and local support of the basic state program, procedures for distribution and procedures for local incentive, if desired.

Fiscal capacity. Fiscal capacity refers to the total resources a governmental unit has available to them to tax and generate revenue for public purposes, which includes education.

Fiscal equity. Fiscal equity is a concept which states that all divisions within a state should have access to similar revenues for public purposes, including education.

Fiscal neutrality. Fiscal neutrality is a concept that was established within the Serrano (1971) decision.

The court stated that a state must provide each district with relatively equal financial capacity, regardless of that districts spending patterns or program offerings.

Malady. Malady or exceptionality was used synonymously for the purposes of this study, and denoted a particular special education category. The categories that were used in the model included: educable mentally retarded, trainable mentally retarded, learning disabilities, behavioral disorders, physically handicapped, multiple handicapped, visually handicapped, auditorily handicapped, communication disorders, homebound and gifted.

Professional educator. Professional educator for the purposes of this study was defined as a teacher, supervisor, principal, superintendent, librarian, or any other person regularly employed for instructional purposes.

Program decisions. Program decisions for the purposes of this study were used to enable determination of programs and units of a state school program, cost differentials (if appropriate) and other special modifying factors.

Revenue decisions. Revenue decisions for the purposes of this study were used to refer to tax sources of both state and local governments to provide funds for education, and the desired rates associated with each revenue source.

## CHAPTER II

### REVIEW OF RELATED LITERATURE

The review of related literature is divided into five major sections. The first reviews the concept of equality of educational opportunity. The second section reviews the major litigation that has occurred in regard to fiscal equality of educational opportunity. The third section reviews the various state support plans for education. The fourth section reviews educational practice in West Virginia (historical and current), and the final section reviews concepts and uses of simulation.

#### Equality of Educational Opportunity

Since the formation of the United States in 1776, the concepts of equality and opportunity have been mentioned in several major policy documents of the nation's beliefs and goals. In addition, the concepts have been defined and redefined by many, depending on their point of reference or interest.

Four examples of the emphasis on equality and opportunity are as follows. First within the Declaration of Independence is expressed,



We hold these truths to be self-evident, that all men are created equal, that they are endowed by their creator with certain unalienable Rights, that among these are life, liberty and the pursuit of happiness.

Second, within the Constitution, the Fourteenth Amendment reaffirmed the concept of equality when it stated,

No state shall make or enforce any law which shall abridge the privileges or immunities of citizens of the United States; nor shall any State deprive any person of life, liberty or property, without due process of law; nor deny to any person . . . the equal protection of laws.

Third, within the Universal Declaration of Human Rights and the UNESCO Constitution, the United States again stated its commitment to the concept of equality, and specifically to educational opportunity when they pledged to affirm,

The concept of equality of educational opportunity without regard to race, sex or any distinction economic or social. (UNESCO, 1945, Article 1, b)

And, fourth, Section 402 of the Civil Rights Act, as cited by James Coleman (1966), charged the United States Office of Education to undertake a survey,

Concerning the lack of availability of equal educational opportunity for individuals by reason of race, color, religion, or national origin in public educational institutions at all levels in the United States. (p. iii)

The previously mentioned documents and statements have expressed a commitment by the federal government to provide for citizen equality, especially in regard to educational opportunity. Generally, the previous statements have been held as the global concepts of equality of educational

opportunity. Specifically, a United States Supreme Court decision of 1937, in regard to Social Security, provided the precedent for interpreting the "general welfare" provision of Article I, Section 8 of the Constitution in light of equality of educational opportunity. The court stated,

Nor is the concept of general welfare static. Needs that were (considered) narrow or parochial a century ago may be interwoven in our day with the well being of the Nation. What is critical or urgent changes with the times. (Helvering v. Davis, 1937, 301 US 619)

Justice Frankfurter in a later decision similarly expressed the changing nature of equal protection when he stated that, "It is not a yardstick. It is a process" (Joint Anti-Facist Refugee Concern v. McGrath, 1951, 341 US 123, 162). What the justice was expressing was that general welfare, of which education could be a provision, is a changing concept, and requires modification over time. In regards to "equal treatment for purposes of Equal Protection Clause," the Supreme Court stated that this too "does change" (Harper v. Virginia Board of Elections, 1966, 383 US 663, 669). This decision, although relating to voting rights, later was relied upon by the California Supreme Court in the Serrano case (487 P.2d 1241) regarding "wealth" as a suspect classification.

Charles Benson (1965) provided the following statement in regards to public education and equal protection:

The only universally accepted criterion of a public activity is that it affords equal treatment to equals. With respect to schooling, this implies that any two children of the same abilities shall receive equivalent forms of assistance in developing those abilities, wherever they live in a given state and whatever their parent's circumstances are. (p. 62)

Prior to the industrial revolution the concept of equality of educational opportunity had little or no relevance. Children during this time were an integral part of the family unit and were expected to follow in their family's interests. The child's education was considered only important in the aspect of acquiring necessary skills to further the family's economic and social unit.

The result of the industrial revolution was that the family unit underwent a great change. Men began being employed outside the family unit and thus they no longer provided homebound vocational training for the young. Coupled with the fact that factories required minimum skills, the need for public education became a concern for the general populace. But, as Coleman (1968) stated, this concern was to the exclusion of Indians and Southern blacks and little was done to encourage the poor. Coleman (1968) had summarized this post-industrial revolution when he stated:

The history of education since the industrial revolution shows a continual struggle between 2 forces: the desire by members of society to have educational opportunity for all children, and the desire of each family to provide the best education it can afford for its own children. (p. vii)

With the turn of the twentieth century, education began to be redefined. Traditional college preparatory secondary schools began to modify their curriculum to meet the needs of the majority of students who were not college bound. And, the concept of "separate but equal" was reaffirmed for black children (Plessey v. Ferguson, 163 US 537, 1896). This provision continued over the next half century until it was struck down by the Supreme Court in Brown v. Board of Education of Topeka (347 US 493, 1954) where it stated in dictum:

Today, education is perhaps the most important function of state and local government . . . . In these days, it is doubtful that any child may reasonably expect to succeed in life if he is denied the opportunity to an education. Such an opportunity, where the State has undertaken to provide it, is a right which must be made available to all on equal terms.

The Supreme Court's statement of value was similarly stated by Thomas Jefferson (cited in Division of Surveys and Fields, 1956) at the country's beginning when he said, "If a nation expects to be ignorant and free in a state of civilization, it expects what will never be" (p. 1). Adam Smith (reprint, 1905) in 1776 similarly said in The Wealth of Nations that education is a value to all society and the expenses of it should "be defrayed by the general contribution of the whole society" (p. 212).

Value implies something of worth, and education provides many economic and social benefits to society which

Johns, Alexander, and Jordan (1972) exemplified as

improvement of the environment in which production takes place, greater flexibility and adaptability of the labor force, and greater ability to develop technical improvements and incorporate them into production processes. Conversely, externalities of a negative nature, from the lack of education. (p. 57)

Theodore Schultz (1970, pp. 29-57) also discussed and recognized the economic factors involved in education. Additionally, Alexander (1976) provided an in-depth discussion of the economic factors involved in education in his article "The Value of An Education." He stated that

Economic measures of educational benefits are inadequate to capture the full value of an educated citizenry. . . . Estimates of social returns to education do not . . . identify the true values to society of higher levels of education . . . for its contribution is the prevention of many social problems. (p. 466)

In regard to providing all citizens with the social and economic benefits a nation may offer, the concept of equality of educational opportunity emerged. Anderson (1965) stated that "Parity of opportunity is the simplest definition of equity: If a group makes up 10% of the population, it should receive 10% of the places" (pp. 341-342). He later discussed variations of his basic propositions which included:

- (1) an equal amount of education to everyone,
- (2) enough education to bring everyone to a given standard,
- (3) enough education to permit each person to reach his potential,
- (4) continual education so long as gains in learning per input of teaching matched an agreed norm. (p. 342)

The first variation Anderson discussed is one concept of equality while variations two, three, and four more fully express the concept of equity. And, as the Supreme Court expressed, this is the concept toward which educational finance practices must evolve. The Court said,

The Equal Protection Clause does not require absolute equality or precisely equal advantages. Nor, indeed in view of the infinite variables affecting the educational process, can any system assure equal quality of education except in the most relative sense. (411 US 24, 1973)

Hale (1975) explained that the theoretical concept of equity must be assessed in terms of distributional equity and taxpayer equity. Distributional equity concerns itself with the allocation dimension of school finance in regard to equal access to resources based upon fiscal and/or educational need. Whereas taxpayer equity concerns itself with the revenue dimension of school finance in regard to "equal treatment of equals who have the ability to pay" (Hale, 1975, p. 22).

Distributional equity is concerned with a uniform definition of need. Fiscal need takes into account variations of district's ability to finance the educational needs of children within the district which some may define as enrollment accounting, either average daily membership (ADM) or average daily attendance (ADA) or full time equivalency (FTE). Educational need as defined by some may be defined as programs, curriculum, teacher in-service,

et cetera. Cubberley (1906) stated that as one reduces the variations in the index used, the more equitable the program.

Taxpayer equity is concerned with the revenue dimension of school finance, and the relationships of local, state, and federal support and tax bases utilized by each. The major sources of revenue generated by the federal government are the personal and corporate income taxes, whereas state government's major tax bases are sales and gross receipts, personal income, and corporate income. The primary source of local revenue for school support is the ad valorem taxes levied on real property, which is considered an inequitable measure of taxpaying ability.

Alternatives suggested to replace the property tax as an effective measure of district wealth or fiscal capacity have included combinations of measures that currently exist. Ahlf (1964) suggested a combination of equalized property value, family income and effective buying income as the most effective measure of fiscal capacity. Others, such as James and Cronin (1969) stated that neither property nor income individually measure wealth, but a combination of the two is appropriate. Per capita income, median family income, and income per pupil represent the most often used measures of fiscal capacity in school finance research.

Whatever the source or the base, Due (1970) suggested that taxpayer equity required

- (a) Equal treatment of equals. Persons regarded as being in similar circumstances are taxed the same.
- (b) Distribution of the overall tax burden on the basis of ability to pay, as measured by income, by wealth, by consumption.
- (c) Exclusion from tax of persons in the lowest income groups, on the grounds that they have no taxpaying capacity.
- (d) A progressive overall distribution of tax relative to income, on the basis that tax capacity rises more rapidly than income. (p.293)

Reflecting on Due (1970), Alexander and Jordan (1976) concluded their analysis of equity offered that a state school finance program must contain

- (a) An adequate determination of the fiscal ability of the local school district and should adjust each district's allocation in terms of its relationship to the state established standard
- (b) Adequacy of funds for a child's educational opportunity should not be compromised by the social citizenry's lack of educational aspirations as reflected in the local tax rate or effort
- (c) Should recognize . . . the individual educational needs of all children throughout the state
- (d) Provisions for greater funding to those school districts which, because of the high cost of delivering education, cannot provide equal services. (p. 337)



Fiscal and educational differences of school district's must be considered if equity is to be attained. The failure of states to recognize these differences in their allocation dimension has caused court challenges to most state funding patterns. An analysis of past and pending litigation follows in the next section.

#### Litigation-Fiscal Equality of Educational Opportunity

Litigation may be utilized by citizens for at least four uses as stated by Gilhool (cited in Vacca, 1975, p. 120). These uses are (a) to secure substantive rights, (b) create new environments to enforce or create rights for citizens, (c) to make visible facts that had previously been unknown, and (d) redress of grievances.

The first three uses of litigation discussed by Gilhool have been evident in litigation involving financing of public education. The substantive right being sought was equal access to educational opportunity. The plaintiff sought to change the financial plans of various states, and thus bring the inequities in the current system to the attention of the public (Vacca, 1975, p. 120). The primary litigation involved challenges based on the equal protection clause of the Fourteenth Amendment of the Constitution, and has been divided into three generations by Alexander and Jordan (1972, pp. 470-508).

The first generation of cases regarded "State School Finance Programs in the Taxation Context" where the financial programs created unconstitutional classifications or violation of equality and uniformity in requirements for taxation (Alexander & Jordan, 1972, pp. 472 and 481). This period lasted approximately 60 years from the early 1910's until the late 1960's and involved taxpayers seeking tax relief for themselves. Within these cases, the taxpayers attempted to restrain state legislatures from enacting laws dealing with equalization measures. But, "The courts established the constitutionality of using the equalization method" (Alexander & Jordan, 1972, p. 495). The Supreme Court also established a "test" to determine constitutionality of a states' tax program, which Justice Jackson (Bell's Gap Railroad Company v. Pennsylvania, 1890) had stated as:

Equal protection does not require identity of treatment. It only requires that classification rest on real and not feigned differences, that the distinction have some relevance to the purpose for which the classification is made, and the different treatment be not so disparate, relative to the difference in classification, as to be wholly arbitrary. (134 US 232)

In 1912, the Supreme Court of Maine, in Sawyer v. Gilmore (83 A. 673, 1912) interpreted that the state's constitutional provision for requiring only equality of assessment and not equity of distribution to be constitutional. The issue was that a property tax had been collected

statewide, but was being distributed to the exclusion of unorganized townships. The court concluded that since the plan was established by the legislature, and if the populace felt it was unjust, it was up to the populace to rectify, not the courts.

This first generation of cases attacked equality of financial public education based on the Fourteenth Amendment of the U.S. Constitution and similar provision of the constitutions of the various states. The decision in the Sawyer case was typical of the cases litigated within this generation. The degree of equalization afforded by the various states was conditioned by the phrase "insofar as it is possible" (Alexander & Jordan, 1972, p. 481)

The second generation of cases were characterized as "educational need" cases and are classified as "pre-Serrano." These cases challenged the concept that educational support was a function of the district's wealth, and that individual needs and deficiencies should be considered.

Two cases were prime examples of litigation in this generation. They were McInnis v. Shapiro (293 F.Supp. 327, 1968) in Illinois, and Burruss v. Wilkerson (310 F.Supp. 572, 1969) in Virginia. In McInnis the plaintiffs challenged the State of Illinois financial plan as being a violation of the equal protection clause of the U.S. Constitution. Plaintiffs contested that as the plan existed,

there was a wide variation in per student expenditure, and that the variation should be based only on need. The court concluded that the plaintiffs had neither clearly stated the fiscal equalization issue nor the educational need issue. Since "judicially manageable standards" had not been provided for need, and the Fourteenth Amendment did not require expenditures based on need, the Illinois plan was not unconstitutional.

Similarly in the Burruss case, plaintiffs argued that state allocations should be based on educational need. The court concluded that disparities were not based upon invidious discrimination by the state, but were produced by deficient taxable value in the district. In his comment, Circuit Judge Bryan (Burruss v. Wilkerson, p. 574) expressed a "hands off" attitude when he stated

Courts have neither the knowledge, nor the power to tailor the public moneys to fit the varying needs of these students throughout the state.

Florida's financial plan was challenged and ruled unconstitutional by the state supreme court in that it prevented poor counties "from providing as good an education for their children as richer counties" (Hargrave v. Kirk, 1971, 313 F.Supp. 944, 1970; Vacated 490 US 479, at p. 945). This decision was later vacated by a federal district court. Although the decision might be viewed as a loss in regard to equity, Alexander (1975) pointed out that had the

original decision stood, it would have "deterred equalization rather than increasing it" (p. 18). The main issue in Hargrave was that plaintiffs from wealthy districts were trying to remove a state cap on millage. The intended purpose was to enable poorer counties to raise more money, but in the final analysis, so would the wealthier districts, thus not really reducing the variations between the districts.

The next generation of cases, which Alexander and Jordan (1972, p. 482) classified were typified by the fact that a "child's education cannot be a function of school district wealth" or what is called the Serrano Era.

On August 30, 1971, the California Supreme Court decided the Serrano v. Priest (487 P.2d 1241) case. The plaintiff contended that the California plan for financing education "makes the quality of education . . . a function of the wealth of the children's parents and neighbors, as measured by the tax base of the school district in which said children reside" (Serrano v. Priest, 1971, p. 1252). In their decision the court stated that there is a "compelling state interest" involved in financing education, since education was a "fundamental interest" (Serrano v. Priest, 1971, p. 1258). By their interpretation of education as a guaranteed fundamental right, the court applied the "strict scrutiny" test, and determined that wealth was

a suspect classification, and could not be used as a condition of a child's education opportunities. The strict scrutiny test shifted dramatically the burden of proof from the plaintiffs to the state. Infact, rarely has a state been able to exhibit a governmental goal sufficiently compelling to withstand strict scrutiny analysis (McCarthy, 1977, p. 160).

Within a year following the Serrano decision, 52 similar cases were filed in 31 states (Geske & Rossmiller, 1977, p. 517).

Six weeks following Serrano, the United States District Court in Minnesota used the findings of Serrano in Van Dusartz v. Hatfield (334 F.Supp. 870, 1970). Again, as with Serrano, plaintiffs contended that the Minnesota financial plan made spending per pupil a function of wealth, and thus violated the equal protection clause of the Fourteenth Amendment. Applying the "fiscal neutrality" concept and "strict scrutiny" concept as defined in Serrano, Judge Lord stated that students in public school "enjoy a right" for a level of funding unaffected by variations in taxable wealth in their district (at p. 872).

In not requiring uniformity of expenditures as was the case in Serrano, the court interpreted fiscal neutrality as saying that

The fiscal neutrality principle not only removes discrimination by wealth but also allows free play to local effort and choice, and openly

permits the state to adopt one of many optional school financing systems which do not violate the equal protection clause. (Van Dusartz, 1971, p. 877)

The Michigan State Supreme Court held in Milliken v. Green (203 N.W. 389 Mich. 1, 2d 457, 1972) that the school finance provision violated the state constitution. The court in applying the "compelling states' interest" and the test of "rationality" concluded that there was an inherent inequality in the property tax bases which created unequal support (at pp. 462-463). As with other cases, the court did not require absolute equality in distribution. Subsequently, with a change of judges in 1973 a new decision ruled the evidence did not prove children in low wealth districts were deprived of equal protection, and thus the decision was vacated (390 Mich. 389, 212 N.W.2d 711, 1973).

In New Jersey, the Supreme Court was asked to decide on the New Jersey plan of financing schools in Robinson v. Cahill (62 N.J. 473, 303 A.2d 273, 1973). The lower court had determined that the plan in operation violated the state and federal provision of equal protection, and the state had failed to provide a "thorough and efficient system of public schools." However, when Robinson was appealed, the Rodriguez decision had just been handed down by the U.S. Supreme Court and the New Jersey Supreme Court refused to review the equal protection issue. But, the

court did affirm the lower court decision that the constitutional mandate of "thorough and efficient" had not been met. The court's concern was that the "end product" meet the mandate, and that the process was up to the legislature to design what was necessary to fulfill the requirement. Implicit within "thorough and efficient" the court charged that "the Constitution's guarantee must be understood to embrace that educational opportunity which is needed in the contemporary setting to equip a child for his role as a citizen and as a competitor in the labor market" (303 A.2d 295, 1973).

Lucas (1972) has suggested that the basic assumption underlying Serrano generation cases involved

1. The equal protection clause applies, at least as it relates to education in the public schools, to the state as an entity.
2. Equal protection is denied to the taxpayer when a given millage per dollar of taxable property "buys" less education per school child in one district than it does in another.
3. The school children in the districts with the lower tax yield per child from a constant millage are denied equal protection.
4. "Poor" children live in districts with low totals of taxable property, and consequently it is argued that the local tax system of school financing is, de facto, a wealth classification, to be viewed with particular suspicion. (pp. 18-20)

This four-year period (1969-1973), characteristic of successful challenges to state school finance provisions,



was brought to an end when the U.S. Supreme Court made their decision in San Antonio Independent School District v. Rodriguez (411 US 1, 1973, 337 F.Supp. 280, 93 S.Ct.1278 U.S. Supreme Court, 1973). In this now famous decision, the U.S. Supreme Court held that financial plans that produced differences in educational opportunities among school districts did not violate the Constitutional provision of equal protection.

The Court, in its conclusion, stated first that the Constitution makes no provision for education; therefore, it is not a fundamental right, and the strict scrutiny test (Serrano) does not apply. Secondly, the appellees were unable to prove that poor people lived in poor districts and thus no class per se was being discriminated against--since a "class of disadvantaged 'poor' cannot be defined in customary equal protection terms" (411 US 19). Echoing previous decisions, Justice Powell restated the doctrine that the solution to the problem is with the lawmakers, not the courts (San Antonio v. Rodriguez, 1973, at 1348).

Some have considered a fourth generation of equalization cases to be those based on Civil Rights actions (Lau v. Nichols, 1974, 94 S.Ct. 786) and challenges to state constitutional provisions. The latter seems especially valid in light of the fact, most, if not all state

constitutions provide for education in addition to containing an equal protection clause. However, state courts have returned mixed decisions on this issue.

The same opinion as Rodriguez was reaffirmed in the Northshore School Dist #417 v. Kinnear (530 P.2d 178, 84 Wash.2d 685, 1974) when the court recognized the importance of schools, but also restated that it was not a constitutional guarantee. Chief Justice Hale echoed Justice Powell when he stated that the legislature, not the courts should "provide for a general and uniform system of public schools" (at p. 196).

Stofstall v. Hollins (110 Ariz. 88, 515 P.2d 590, 1973), an Arizona case, was similarly concluded with the statement that education was a state constitutional right, but the financing plan did not violate the "equal protection" clause or "general and uniform" clause of the state constitution. The court, however, did not relate fiscal equality and the "general and uniform" provision of the state constitution.

Similarly the Idaho Supreme Court (Thompson v. Engleking, 537 P.2d 635, 1975) held that even though the state is constitutionally charged with "establishing and maintaining a general, uniform, and thorough system of public, free, common schools for children," this does not require equal amounts allocated throughout the state.

The trend in this era has not all been bleak. A Connecticut court held that the constitutional requirement that the legislature enact "appropriate" laws to provide free public education was not being met by the current financial plan (Horton v. Meskill, 1974, 31 Conn.Supp. 377, 322 A.2d 113). Final decision is pending on appeal to the state supreme court.

A trial court in Washington (Seattle School Dist. No. 1 v. Washington, Cir. No. 53950, 1976) held the state financial plan violated the state constitutional provision for ample funding of educating all children within its borders. Georgia's constitutional provision of providing an adequate education for all citizens is similarly under challenge (Thomas v. Stewart, Docket No. 8275 (Polk County Superior Court, 1976)). The Washington decision is on appeal to the state supreme court and the Georgia case is also expected to reach that state's supreme court.

With all the litigation that has occurred in the past 10 years, one would have expected closure on the issue of equality and financing the public schools. Part of the problem that now exists is that although intending the same thing, each state constitution uses different terms, and thus one settlement does not apply to another state. The fact that education is a "state's right" was elaborated on in Horton v. Meskill (1974) when the court stated

Because educational finance systems vary from state to state, and because the provisions of state constitutions vary from state to state, decisions in other states raising the issue under a state constitution are of little value as precedents. (31 Conn.Supp. 377, 332 A.2d 813)

West Virginia's system of financing public schools was under litigation (Pauley v. Kelley, Civil Action 75-1268) based on a "thorough and efficient" clause of the state constitution (Article XII S.1). The "Lincoln County Case," as it was called, presented a challenge similar to the one argued in Robinson v. Cahill (62 NJ 473, 303 A.2d 273, 1973) especially in light of the similarity in wording of the West Virginia and New Jersey Constitutions.

Prior to the "Lincoln County Case," the West Virginia court had expressed its opinion of the "thorough and efficient" clause and the importance of education when it stated

The will of the people, through the basic law enacted by them, that a thorough efficient system of free schools is of paramount importance in a free society and that neither the legislative nor the executive branch of government may perform any act which would result in the eliminating of this safeguard. (State ex rel. Brotherton v. Blankenship, 1973, 207 S.E.2d 436, 1973)

On June 14, 1977, the Thirteenth Judicial Circuit Court, Justice Smith presiding, stated that

It seems clear from the record that Lincoln County is not providing these basics, and that the school system in that county falls short of that constitutional mandate. (Pauley v. Kelley, 1977, p. 6)

By that, the judge was referencing the constitutional provision of "thorough and efficient" schools. However, when the compelling state interest test was applied, a class of suspect poor could not be identified (similar to Rodriguez). In finding for the defendants, Justice Smith stated:

Where the state is failing to meet its constitutional responsibilities, it retains the obligation to do so through other means of supplemental funding. But the fact that the State is failing to meet its total constitutional responsibility does not render unconstitutional the statute which established the funding mechanism for meeting part of that responsibility. (Pauley v. Kelley, 1977, p. 13)

In regards to the confusing constitutional questions involved in this and other decisions, Justice Powell of the U.S. Supreme Court stated:

One need only look to the decisions of this Court--to our reversals, our recognition of evolving concepts, and our 5 to 4 splits--to recognize the hazard of even informed prophecy as to what are "unquestionable constitutional rights." (Wood v. Strickland, 1975, 420 US 329)

In summary, "What has now become clear is that the courts have provided only an opportunity, not an answer; a starting point for reform, not a solution to the unfairness and irrationality of educational funding in America" (Berke, 1974, p. x).

### State Support Plans for Education

The previous two sections noted that much has transpired in the area of equal educational opportunity. But, as Michelson (1974) summarized, "Equality is a ridiculous place to end school finance, but a good place to start" (p. 442).

In discussing state financing of education, the reference is usually made to state-aid formula. Cope (1969) commented that usually these formulas are generally accepted without adequate questioning, based on apparent validity. He continued by adding that once accepted, they tend to grow more rigid and detailed, and that "formulas merely bring confusion out of chaos" (Cope, 1969, p. 30). Pierce, Garmes, Guthrie, and Kirst (1975) described how simple formulas, over time, have had to be modified to satisfy interest groups or correct injustices within the formula. They concluded much the same as Cope (1969) when they stated, "Over time these small changes make the school finance formula a mesh of adjustments and computations" (p. 122). Most authors in the field concur with Cope and Pierce et al. summary of most state funding formulas.

Although cloaked by many names and different terms, state funding programs (formulas) can generally be grouped as either flat grant, equalization programs, or complete

state and federal support. Prior to the analysis of these plans a brief historical perspective on state funding and the early theorists will be discussed.

Prior to the formation of the United States, education had been considered a colonial state function. The Massachusetts Bay Colony in 1642 and 1647 through court decisions and the Deluder Satan Act established that parents must provide for the education of their children, and that if a town consisted of 50 families or more, a teacher must be provided. This early attempt by the colonists was later modified into what was known as "The New England Plan." The ideas of compulsory attendance, local control and local support of education were encompassed within this plan.

The Constitution of the United States is silent with regard to education. Due to this omission, whether intentional or not, education thus became a state function according to the Tenth Amendment since any power not expressly mentioned within the document would reside with the states.

Most states during the nineteenth century assumed responsibility for public education by "authorizing the levy of local school taxes for the support of the public schools" based on a school census with little concern for equality of educational opportunity or a minimum educational program for all children (Johns, Alexander, & Jordan,

1972, p. 2). There existed throughout the century neither an integrated plan nor conceptual theory of school finance.

### Early Theorists

The concept of state control was now established and accepted by most people. But, there was no real philosophy or practice of state aid throughout the country. Then, with the dawning of the twentieth century, several philosophers emerged. These early philosophers were associated with the major universities of the time, namely Teachers College, Columbia University, University of Chicago, and the University of Pennsylvania (Johns et al., 1972, p. 3).

Ellwood P. Cubberley is known for "formulating the basic concepts of state school support" (Cohn, 1974, p. 14). Cubberley was a student at Teachers College, Columbia University, and received his doctorate from there in 1905. One year later, his revised dissertation was published under the title School Funds and Their Apportionment.

In his book, Cubberley analyzed basic state school financing from a historical perspective, a legal perspective, and wealth distribution effects of the Industrial Revolution, and the evidence of unequal educational opportunities within a state (Johns et al., 1972, p. 3). Cubberley believed both the state and local governments shared responsibility for school finance and that local needs,



fiscal effort, and pupil attendance should be referenced when allocating financial aid. Cubberley applied his basic philosophy of state responsibility when he stated:

Theoretically all the children of a state are equally important and are entitled to have the same advantages; practically this can never be quite true. The duty of the state is to secure for all as high a minimum of good instruction as is possible, but not to reduce all to the minimum; to equalize the advantages to all as nearly as can be done with the resources at hand; to place a premium on those local efforts which will enable communities to use above the legal minimum as far as possible; and to encourage communities to extend their educational energies to new and desirable undertakings. (p. 17)

Cubberley suggests that a state-wide school tax might best equalize the fiscal burden among school districts and that the best basis for fund allocation was a combination of a unit designation, which he called "teacher employed" and aggregate days attendance. He further suggested creation of a "reserve fund" to supplement districts which were at maximum legal effort, but could not generate sufficient revenue to meet minimum state demands (pp. 250-254).

Harlan Updegraff is known "for justifying the rewards for local effort on the basis of efficiency" through his 1921-22 analysis of New York and Pennsylvania schools (Cohn, 1974, p. 19). Through his analysis of the financial policies of these states he added the concept of local effort in addition to the concepts of Cubberley, with whom he agreed.

Updegraff's basic principles were that (a) local support was fundamental; (b) local districts should have enough taxable property for school purposes (without an undue burden on property owners); (c) part of the support should come from the state, based on certain factors (inversely to districts' wealth); (d) state aid should increase efficiency of citizens in democratic government; and (e) guarantee equal opportunity (cited in Johns et al., 1972, p. 6).

Not only did he articulate his concepts, Updegraff introduced two new concepts, the first of these concepts being the idea of the teacher unit for defining a district's need; the second was an equalization plan for distributing state aid.

Updegraff's teacher unit was different from Cubberley's teacher employed unit, in that within the context of the teacher unit, a predetermined number of students per class would compose a teacher unit. Within the context of the equalization plan, Updegraff proposed that a scale be established whereby increasing amounts of aid were provided by the state for increasing amounts of local effort. Updegraff's plan provided for helping those districts who helped themselves. This was achieved by increased support to those districts who were low in property value but were at a high level of effort.

Several states now use a variation of Updegraff's percentage equalizing plan, which will be dealt with later in this chapter. The plan can also be modified through addition of a recapture and redistribution clause (Coons et al., 1970), p. 207), in what is referred to as "Power Equalization." Updegraff's plan has been categorized, by some, to provide incentives to local districts for quality education (Johns et al., 1972, p. 7).

George D. Strayer and Robert M. Haig are best known for "emphasizing the equalization of educational opportunity" (Cohn, 1974, p. 17). While associated with Columbia University they analyzed New York's state plan for financing schools, which was Cubberley's Flat Grant Plan. They concluded that equalization of educational opportunity and reward for local effort were not complimentary, but at variance to each other (Cohn, 1974, p. 17). They attempted to define equalization in terms of a minimum educational program, or what has become known as "The Minimum Foundation Program."

Within their plan, as was explained in Financing of Education in the State of New York (1923) they established the necessities for a state to provide for "equalization of educational opportunity" or "equalization of school support" (Johns et al., 1972, p. 8). The necessities were defined as (a) within localities, children will be offered

a prescribed minimum of equal education; (b) in relation to the abilities of the taxpayers of the locality, revenue for education would be raised by the state or local taxation at a uniform rate; and (c) "to provide adequately either for the supervision and control of all the schools, or for their direct administration by a state department of education" (Strayer & Haig, 1923, p. 174).

The steps Strayer and Haig presented for establishment of their plan consisted of (a) the state establishing the cost needed per pupil for a satisfactory minimum program; (b) the state computing a property tax rate necessary to finance the established program, using the wealthiest district as the base; (c) the tax rate established is then levied by all districts; and (d) any difference between what is raised and the amount necessary to finance the minimum program is contributed by the state.

Strayer and Haig did not concur with either Cubberley or Updegraff in their reward for local effort, although in their plan they did allow local districts to levy above the minimum. Therefore, as Cohn (1974, p. 18) stated, they did not provide for equal educational opportunity, but minimum educational opportunity. Charles Benson (cited in Coons, Clune, & Sugarman, 1970, p. 65) critiqued the Strayer-Haig Plan when he said,

In most states, nearly all districts, rich and poor, do tax at a level above the minimum, so that the foundation program is indeed but a foundation upon which the districts with richer tax bases continue to build much finer houses than do poorer districts. Under this plan, equal educational opportunities in terms of balancing offerings, wealth and effort is a hoax.

Paul R. Mort was known for "developing the minimum foundation program" (Cohn, 1974, p. 18). A student of Strayer at Columbia University, he attempted through his dissertation, Measurement of Educational Need (1924), to define the satisfactory minimum program conceptualized by Strayer and Haig. That is why many felt that more than a theorist, Mort was a disseminator and developer (Johns et al., 1972, p. 10).

Mort stated a minimum state program should provide that (a) if a program existed in all or most districts within the state, they were acceptable for the equalization program; (b) if unusual expenses occur for meeting minimum program outside of local control, they too were eligible; and (c) if uncommon conditions require additional offerings, these also may be included (Mort, 1924, pp. 6 and 7). Mort, like Cubberley, considered local leeway very important (Cohn, 1974, p. 18). He especially encouraged districts to go over the minimum and provide for innovation and change. Additionally, the fact that classroom costs varied from place to place, whereas other costs remained constant in regards to number of pupils, concerned

Mort, and initiated his development of the concept of the weighted pupil. The concept simply takes the number of students in a school times a factor, which is based on things such as size of school, transportation, high school, et cetera, and yields an adjusted enrollment as an attempt to provide for differential costs.

Henry C. Morrison is best known for "advocating that the state should become the sole unit of taxation and administration of public schools" (Cohn, 1974, p. 20). Morrison expressed his ideas in his book School Revenue (1930), which he authored while on the staff at the University of Chicago. Morrison maintained that because of the fiscal discrepancies between districts, all previous attempts had failed to meet educational need and provide an equitable tax system. He further stated that the state should be the taxing unit and administrator of the schools through use of what he suggested was the most equitable tax, income tax.

Although Hawaii is the only state to date which has adopted full state funding, New Mexico, Kentucky, and North Carolina rank high in percentage of state support, 87, 83, and 81 percent, respectively, with seven additional states providing at least 70 percent (Tron, 1976, p. 10).

### Funding Plans

Although all states have what they call unique "equalization" funding formulas or programs, all may be classified as either flat grants, equalization grants, or complete state and federal support (Johns & Salmon, 1971, p. 122).

Before continuing with the analysis of each, an important concept needs to be defined since reference is made by legislatures that in the area of school finance, the purpose is equalization of educational opportunity. For purposes of this study, the Johns and Salmon (1971) definition was used:

Financial equalization is most nearly accomplished when the following two factors are met; (1) educational needs of the student population are taken into consideration before the allocations are made, and (2) the variation of the ability of the local school districts to support education is reduced or eliminated through the utilization of state sources. (p. 120)

Cohn (1974, p. 27) visually illustrated the two determinants of equalization, when he discussed the Critical Issues in Evaluation of Equalization Effort, which are consistent with the Johns and Salmon definition.

Flat Grant Programs as formulated by Cubberley represented sums of money distributed to school districts based on a unit allocation (per student, classroom, etc.). They can be further categorized as being uniform or variable

(Johns & Salmon, 1971, p. 121), and are used in addition to one of the other plans to be discussed.

Under "uniform flat grants," an amount is distributed per unit, with no consideration given to either educational need or fiscal capacity. In contrast, variable flat grants are distributed on a rate per unit, but a weighting factor is applied to compensate for some factor beyond the school districts control. With either type, the ultimate disposition can be general or special.

Flat grants do provide for some degree of equalization in that on a uniform basis, wealthy districts pay in more than they receive. But, as Alexander and Jordan (1976) commented, flat grants are a viable equalization plan only to the degree school districts are at or near fiscal capacity, or if the grants, "were large enough to approach full state funding" (p. 355).

Equalization grants consider variations in the ability of local school districts to tax, but not all take into consideration the needs of the pupils (Johns & Salmon, 1971, p. 122). The ultimate disposition of these grants, as with flat grants, can be for either a general or specific purpose.

To analyze these types of grants more productively, they will be discussed in the context of the types as outlined by Johns and Salmon (1971), and by Cohn (1974).



The categories are (a) Strayer—Haig and Mort plan, (b) percentage--equalizing or state-aid ratio, (c) district power equalizing, and (d) guaranteed valuation program.

With the Strayer—Haig and Mort Plan, the state determines a minimum satisfactory level of education per child, a levy is then required of all districts against their property valuation, and the difference between the amount raised and the amount needed for the satisfactory minimum is provided by the state (Johns & Salmon, 1971, p. 123). The modifications developed by Mort were the concept of the weighted pupil and the determination of the uniform levy. Mort utilized the weighted pupil in dealing with the ideas of fiscal capacity and need, whereas he categorized the original plan as only providing for the former. Strayer and Haig had stated that the levy was to be determined by the wealthiest district in the state levying a rate which would provide the per pupil expenditure level established by the state as the minimum program. Mort's modification shifted the focus from the state's wealthiest per pupil district (Cohn, 1974, pp. 33-34). He further suggested that another "key district" could be identified, e.g., the district at the 75th percentile of per pupil wealth.

The extent to which a foundation program equalizes is dependent on the expenditure level the state sets and

the tax rate chosen by the district. A high foundation level enables more expenditures and less disparities between districts. However, as the districts tax above the mandated rate, the wealth of the district becomes a key factor, thus causing wide disparities again.

Although it has advantages over flat grants, Alexander and Jordan (1976) summarized this plan when they stated that "It does not provide for fiscal equalization of local levy beyond a minimal level," and because of requiring a local millage it has been found objectionable in many states (p. 355). Likewise, the Education Commission of the States criticized this plan as setting conservative per pupil expenditure amounts and being "below a practical level of support" (1975, p. 4). They concluded that:

If a child had his choice of place to be educated in a state with a "foundation" system, he would be well-advised to find a wealthy suburb, which may not be subject to tax limitations imposed on some municipalities and which has a very high assessed valuation. He could expect to find this suburb peopled with well-educated professional types who do not protest spending for schools, at least for their own children. (ECS, 1975, p. 4)

Percentage-equalization or the state aid ratio program (Johns & Salmon, 1971, p. 123) is unique in that the locality determines the level of expenditure. As Updegraff originally proposed the plan, it was a variable-level equalization program which attempted to reconcile equalization of educational opportunity and reward for local

effort. Coons, Clune, and Sugarman (1970, p. 165) stated that in focusing on the local budget and preserving local incentive, the plan placed value on effort not wealth.

Under this plan, the state agrees to pay the districts a predetermined percentage of the total expenditures, with the ratio of district's wealth per pupil to the state's average district wealth per pupil as the relationship. The plan allows for state funds to be allocated in an inverse proportion to taxpaying ability (measured by property value per pupil).

Without a minimum or fixed dollar amount, dollars per pupil would be a function of local effort alone, which is characteristic of another equalization plan called "power-equalizing" (Alexander & Jordan, 1976, pp. 346-357).

In addition to the typical concern for equalizing a district's property valuation per pupil, Coons, Clune, and Sugarman's concern was on effort. The power equalizing plan assures an equal yield for an equal effort or as Cohn (1974) stated "calls for equal state aid to districts based on equal tax effort" (p. 35). Coons et al. (1970) stated the plan allows districts to establish and determine their own levels of spending, with tax effort being the key (p. 202). Regardless of the district's wealth, if its effort is high it will be assured of higher expenditures. "Moreover, if a district can raise educational funds for

a given tax effort, in excess of the stipulated amount set by the state, the excess must be transferred back to the state" (Cohn, 1974, p. 35). The transfer-back, or "recapture" is considered by some an essential part of the district power equalizing plan. An example would be that if two districts "impose the same property tax rate, they will have identical educational funds per pupil," regardless of their wealth or poverty (Cohn, 1974, p. 35). With this recapture provision this formula truly can be called both positive and negative in the amount of state equalized aid to the district.

The main point emphasized under this plan is that local boards (districts) know best what expenditures are needed to meet their educational goals, and therefore should control the purse strings. However, Alexander and Jordan (1976) stated that if the state would establish no local fiscal standard, it would abdicate its responsibility to provide for an equal system of education (p. 357). Coons, and his associates (1970), recognized yet another problem concerning the average district, in that rich districts might wind up being equalized down (p. 167). In the final analysis, depending on the schedule established by the state, Michelson (1974) stated, "District power equalizing preserves a lot of the status quo, with possibly some higher local school tax rates thrown in" (p. 104),

especially if the cost of other services in municipalities are considered.

Another equalizing approach is known as guaranteed valuation. The state guarantees each district a fixed valuation or tax yield per unit (Johns & Salmon, 1971, p. 123), which may or may not be weighted. The difference between what the tax generates and the guaranteed yield is the state's contribution (Cohn, 1974, p. 32). The effect, this plan seems to be equivalent and provides the same equalizing effect as the basic foundation approach (Cohn, 1974, p. 32 and Johns & Salmon, 1971, p. 123). The difference between the guaranteed valuation plan and the district power plan being that under this plan the tax rate is state mandated.

In essence, all plans for financing public education are based on tax effort, tax yield, and equalized property valuation per pupil. Allocations are distributed in an inverse proportion to wealth, which is typically measured by property valuation per pupil. The roles of state and local effort differentiate the basic equalization programs by name, but in their pure form, they are mathematically equivalent. It is through the specific implementation that the different equalization abilities of the shared costs formulas become apparent.

Some of the provisions which alter the financial plans are minimums, save harmless provisions, definitions, et cetera. A minimum is a prescribed amount a district receives, and can be a flat grant regardless of another equalization provision, or the amount might be stated as a minimum each district receives (floor). Save harmless provisions guarantee districts that new provisions of the financial plan, or a new financial plan will not reduce allocations to the district from prior years. Definitions, specifically for enrollment, are essential factors in any financial plan, and can account for wide discrepancies in amounts received.

Total State and Federal Support is only in evidence in the State of Hawaii. Under this plan, units of need determine the revenue allocation, with local ability not considered. In defense of full state funding the National Educational Finance Project showed a positive correlation between the proportion of state revenue and the degree of equalization (Johns & Salmon, 1971, p. 137). This also supports the opinion of many, including Johns and Salmon (1971), that greater financial equalization is achieved when the state assumes responsibility for funding (p. 138).

The various states are funding education as they see fit, exercising their States-rights guarantee. But an important comment from the President's Commission on

School Finance (1972) should bear final witness to the success of state plans:

The financial problems of education derive largely from the evolving inabilities of the States to create and maintain systems that provide equal educational opportunity and equality education to all their children. Having made that observation, we hasten to state that we are not assigning blame, but are rather attempting to locate the points where reforms must be achieved. Efforts by the States over the years to eliminate or at least reduce disparities in the delivery of educational resources have simply not kept pace with needs that have grown beyond the abilities of the States to fulfill them. (p. x)

### Educational Finance in West Virginia

#### Historical

Due to sparsity of population, and prior control by Virginia, when West Virginia became a state in 1863, only 3 counties had free district schools. Two years following statehood, 27 counties were servicing 16,000 students, and five years subsequent, 1756 schools existed with 1810 teachers (Department of Education, 1973, p. 1).

The state constitution was ratified in 1863, and provisions were made for a "thorough and efficient" free school system, creation for an investment fund to finance the free schools, provision for county school superintendents, and an elected general state superintendent of free schools. The state superintendent was subsequently made

part of the executive branch of government in 1872, and for 37 years he was the extent of the Department of Education. Additional duties included being adjutant general and quarter master general from 1871-1877.

In 1872 a constitutional revision was completed with the following two provisions specified:

Art. XII, Sec. 1 - The legislative shall provide, by general law, for a thorough and efficient system of free schools.

Art. XII, Sec. 2 - The State Superintendent of Free Schools shall have a general supervision of free schools and perform such other duties in relation thereto as may be prescribed by law.

The same year the legislature established a State Board of School Funds composed of the Governor, State Superintendent, Auditor, and State Treasurer.

The legislature also created, in 1872, a General School Fund for supporting free schools, which included the salary of the state superintendent and expenses of his office, and which specified the sources of revenue. Schools were to be financed by direct taxes on personal property and real estate (10¢ per 100), monies received by fines and forfeitures, and investment in United States bonds. The state superintendent distributed all money until 1939 when the Board of School Finance, which now consisted of State Superintendent, Tax Commissioner, and Director of the Budget, assumed responsibility for disperson of funds.



By 1933, the depression had caused many districts to close, because of declining property values and tax incomes the legislature consolidated districts; redefining a district as a county. Prior to 1933, the General School Fund provided 5 percent of total cost of district schools; this amount grew to 53 percent in 1965 (Pearson & Fuller, 1969, p. 1354), and to approximately 58 percent in 1976).

Funds for homebound (crippled) children were appropriated in 1941, and categorical aid was enacted into the code. Similarly, when the Works Progress Administration ceased supporting the school lunch program in 1942, the state assumed the responsibility. Finally, in 1972, \$200 million was appropriated under the Better Schools Amendment for all counties to provide additional classroom facilities.

### Current System

West Virginia's current system of allocating monies is based on what is referred to as a "demand formula." It is unique in that the legislature must fund what the formula determines is necessary to finance education in the state.

The first step in determination of funds in the formula is the computation of the Foundation Allowance for

Professional Educators (§ 18-9A-4). Using a minimum state salary matrix, professional educators are provided for at a rate not to exceed 55 educators per 1000 children.

The second step is a Foundation Allowance for Other Personnel (§ 18-9A-5) and it is allocated based on two computations. An amount equal to 14 percent of the allocation for professional educators is ascertained and distributed to the counties in proportion to the adjusted enrollment. Then, an amount equal to 6 percent of the allocation for professional educators is determined and distributed to the counties in proportion to the number of full-time bus drivers.

The third step is a Foundation Allowance for Fixed Charges (§ 18-9A-6) and it is determined by addition of the allowances for professional educators and other personnel, then multiplying this sum by the current social security rate plus 2 percent. Items included for coverage are FICA, Workman's Compensation, property insurance, and so forth. The money is then distributed to the counties based on the corresponding professional educators allocation to the counties.

The fourth step is a Foundation Allowance for Transportation Costs (§ 18-9A-7) which is determined by a five step process. Eighty percent of each county's actual transportation costs are determined, excluding salaries.

That sum is then added to the total cost of insurance premiums on buses, buildings, and equipment used in the transportation program. Ten percent of the replacement value of the bus fleet is then added, along with a figure that equals 80 percent of the cost of contracted transportation services and public utility transportation services. Finally, aid in lieu of transportation is added based on a state average amount per pupil.

The fifth step is a Foundation Allowance for Administrative Costs (§ 18-9A-8), which is calculated as being 1 percent of the allocation for professional educators. All counties receive an equal amount.

The sixth step is a Foundation Allowance for Other Current Expenses (§ 18-9A-9), and it is computed as being equal to 10 percent of the allocation for professional educators and other personnel. The money is distributed to the counties in proportion to the adjusted enrollment.

The seventh, and last step is a Foundation Allowance Toward National Average Attainment (§ 18-9A-10). When the average expenditure per pupil in West Virginia is below the U.S. Office of Education figures for the national average, funds which accrue from increased local share balances in the general school fund, it is allocated back to the districts in proportion to the adjusted enrollment.

The seven step formula comprises West Virginia financing of public schools, and is depicted in Table 1. Each one dollar allocated to column one, results in a cost of \$1.42 when the formula is complete. Other aspects of the state support program includes supplemental salary allocations for professional staff (outside of basic support program), minimum salary support for service personnel (outside of basic support program), and early childhood aides (outside of basic support program). Being outside the basic support program enables the legislature to allocate money where it desires without affecting the whole program by becoming part of the formula. The state also allocates funds for Exceptional Children, Vocational Education Funds, Safety Education, Orphanage Aid, and School Lunches.

In addition, the State provided money for Incentive for Improvement of Program Funds (§ 18-9A-14) to encourage counties to establish new and improved programs and to reduce class size. Finally, monies are also provided to counties which experience increased enrollments from one year to the next (§ 18-9A-15).

Chapter 18, Article 9-A, Section 11 of the West Virginia Code relates to the computation of local shares for school support and to the appraisal and assessment of property for taxes. The tax commission is directed to make

TABLE 1  
Effect on Additional Allocations  
for Professional Educator State Aid Formula

Foundation Allowance	@ \$1.00	Distribution
(1) Professional Educator	\$1.00	County
(2) Other Personnel:		
a. 14% of (1)	.14	All Counties in proportion to adjusted net enrollment
b. 6% of (1)	<u>.06</u>	All Counties in proportion to number of full time drivers
Total - 20% of (1)	.20	
(3) Fixed Charges		
7.85% of (1) + (2)	.09	All Counties based on distribution of (1) & (2)
(4) Transportation Cost	None	
(5) Administrative Cost 1% of (1)	.01	All Counties equally
(6) Other Current Expense		
10% of (1) + (2)	.12	All Counties in proportion to adjusted net enrollment (\$.002 per pupil)
(7) National Average Attainment	None	

Note: Total Cost = \$1.42

and maintain nonutility property appraisals annually. West Virginia has four classes of property for tax purposes and is required to assess at not less than 50 percent nor more than 100 percent of the appraised value.

The classes of property as defined by the state tax commissioners office are (Local Government Relations Division, 1975):

- Class I - All tangible personal property employed exclusively in agriculture, including horticulture and grazing; all products of agriculture, including livestock, while owned by the producer; all notes, bonds, and accounts receivable, stocks, and any other evidences of indebtedness.
- Class II- All property owned, used and occupied exclusively for residential purposes; all farms, including land used for horticulture and grazing, occupied and cultivated by their owners or bona fide tenants.
- Class III- All real and personal property situated outside of municipalities, exclusive of Classes I & II.
- Class IV- All real and personal property situated inside of municipalities, exclusive of Classes I & II. (p. viii)

The local share for support of schools, as defined in Chapter 18, Article 9-A, Section II, specifies two factors as the determinants. First, 97.5 percent of the value for public utility property is determined, and 47.5 percent of the value for nonutility property is determined. Applicable rates for each class of property are then applied on the basis of 19.6 (per \$100) for

Class I, 39.2 (per \$100) for Class II, and 78.4 (per \$100) for Classes III and IV. The result is the local share. Counties may, for a period of not more than five years, adopt an additional special levy up to 100 percent of authorized levy; however, 60 percent of the voters must approve.

Of the money raised by the property tax, approximately 99.5 percent remains within the counties. For the tax year 1975, see Table 2 for a breakdown of the assessed valuation on nonutility property in the State of West Virginia.

TABLE 2  
Assessed Valuation of Nonutility  
Property in West Virginia (1975)

Property Class	Assessed Valuation
Class I	\$ 675,319,569
Class II	2,309,264,807
Class III	2,272,422,582
Class IV	1,767,157,366

Note: Total assessed valuation = \$7,024,146,324

### Simulations

The terms simulation and/or model have been around for a long time, with people generally feeling comfortable using either term for descriptive purpose. But, what do they mean? When is it appropriate to use the terms?

Initial review of the literature yielded the following definition of model by Schmatz and Sippl (1972): "A representation in mathematical terms of a process, device, or concept" (p. 108), and that a simulation was "Subjecting man to a complex environment similar to one in which he may wish to operate so that he may gain a feel of its dynamic behavior" (p. 163). In a similar manner, the Organization for Economic Cooperation and Development (1971) defined a model as "a theoretical description of certain aspects of real-life process" (p. 17). Fitzpatrick (1962), likewise defined a simulation as "a working model or representation of a system, and it is assumed that the observation made can be transferred to the real world to make effective predictions" (pp. 9-10).

The definitions provided that models are the framework or representation of a real-life environment, and that simulations are where experiments and manipulations are performed within the model. McLeod (1968), Manji (1972), Cruickshank and Broadbent (1970), and Shubik and Brewer (1972), as well as many others, appear to be in concert with the operational definitions.



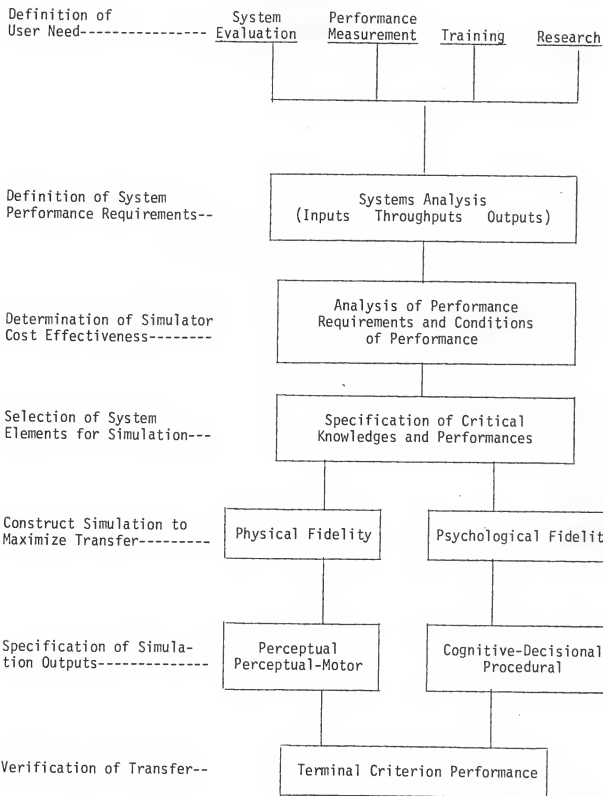
Simulations do not necessarily convey factual information, and that may not be their purpose; they are to provide learning experiences about situations and environments, and it is through interacting with the simulation that learning takes place (Coombs, 1976, pp. 1-2). The learning process may take on one or more aspects depending on the desired result.

For purposes of this study, Armstrong and Hobson's (1976) analysis of simulation uses was used in that the experiences could provide for education and training, decision making, research, and/or investigation (p. 88). Inbar and Stoll (1972) and Mize and Cox (1968) concur regarding the categorical uses.

McClosky (1972, p. 6) presented a Conceptual Framework for Simulations (see Figure 1), which not only listed similar uses as stated by Armstrong and Hobson, but also provided a guide to development. The left side indicates sequential steps, and the body represents concepts to be developed within the sequence with respect to appropriate categorical use(s).

Additionally, John Stocton (1973) expanded the uses of simulation into the affective domain when he stated that "One of the primary uses of a simulation is that it provides an initially imperfectly known environment and imposes on the participants the problem of defining a

Figure 1. Conceptual Framework for Simulation (from "Perspectives on Simulation and Miniaturization" by M.R. McCloskey, 1972, p. 6. Copyrighted by the Human Resource Research Organization, Reprinted by permission)



successful behavior pattern consistent with its characteristics" (p. 90).

It is difficult to segregate simulation uses from simulation advantages. Broadly speaking, simulation allows for experimentation on a system, or a part of a system, or problem associated with a system, without directly dealing with the system (Mize & Cox, 1968, p. 1).

Shubik and Brewer (1972) concluded their analysis of simulation uses in very much the same manner as Mize and Cox (1968), but expanded on the situations where simulations would be most desirable when they stated:

Simulation provides the means for gaining experience and for making and correcting errors without incurring the costs or risks of actual application . . . they should be used when (1) it is either impossible or extremely costly to observe certain processes in the real world, (2) the observed system is too complex to be described by a set of mathematical equations, (3) no straightforward analytical technique exists for solution of appropriate mathematical equations, and (4) it is either impossible or very costly to obtain data for more complicated mathematical models describing the system. (pp. 81-82)

Additional advantages cited by various authors (Shubik, 1964; Tansey & Unwin, 1969; Cruickshank & Broadbent, 1970; Carter & Huzan, 1973; and Chapman & Cousins, 1974) include permitting self expression of the learner, safe, economical, experientially based, trainee controls results, and relevance. While minimized, some of the disadvantages cited by these same authors include the fact

that not all real life situations fit neatly or accurately into a prepared program, and that some users may be poorly prepared to experiment with the model.

With the capability to store an abundance of information on various subjects, and its ability to manipulate and analyze a multitude of data at such rapid speeds, the computer became a perfect medium for simulation.

H. G. Wells, over 80 years ago, in an obscure novel (cited in Bailey, 1977, p. 157), stated,

If humanity . . . cannot collectively invent devices and solve problems on a much richer scale than it does at the present time, it cannot hope to achieve any very much finer order or any more general happiness than it now enjoys.

Somewhat in response to Mr. Well's challenge, computer technology has developed and advanced knowledge further and faster than it has ever progressed.

In essence, a computer is "a general instruction-obeying machine" (Williamson, 1970, p. 181). Being an analytical tool, and most simulations being analytical techniques, Shubik and Brewer (1972) discussed computer simulations ability to analyze events and systems over periods of time. Expanding this idea, Cohen and Cyert (1965) concluded their analysis with

Computer models and man-machine simulations offer an unparalleled means by which we can: (a) formulate extremely detailed and highly precise models of organizational behavior; (b) test the empirical validity of these models; (c) experimentally manipulate the models in a way which

is usually prohibitive with real-world organizations; (d) predict the future behavior of existing or redesigned organizations; and (e) train people to behave more effectively in an organizational setting. (p. 158)

The major criticism of computer simulations lie with the fact that since the machine only does what it is instructed to do, it cannot take assumptions for granted. This limitation, therefore, precipitates the necessity for more structure within the simulation, which may therefore further remove it from the real world (Inbar & Stoll, 1972, p. 23).

### Historical

The development of games and simulations has evolved over many centuries. Anytime someone acted as though he were someone else, he was regarded as simulating that person or that event.

Taylor and Walford (1972) traced simulations back to what they referred to as war games. "Wei-hai," a 5000 year-old Chinese game, which is believed to be the ancestor of chess, is considered one of the oldest recorded simulations (p. 20). Although used for amusement, the intent of the early simulations seemed to be in the area of education and training and decision making of junior military officers. Past campaigns were presented with the participant making responses to conditions and observing resultant

responses and outcomes. Military use has continued through present day.

With its success in the military, both in ancient and present times, simulation was then introduced into the business field through the encouragement of the American Management Association (Taylor & Walford, 1972, p. 23). Stressing the importance of training in this area, the American Management Association held a special symposium on the topic in 1961. Tansey and Unwin (1969) noted that the main focus was initially toward training new managers, but, being on a piecemeal basis, it lacked continuity. Finally, the Association developed "Top Management Decision Simulation" where people were provided with experiential learning, as to the role and functions of executives. Decisions were made, and the participants saw the results of their actions.

Through the actions of the American Management Association and others, simulation has become a vital element in the business environment. Tansey and Unwin (1969) elaborated on this when they explained that because of the influence of simulations, an international organization was set up to, "devise new approaches to training, to popularize management education, and to assemble information" about management and behavior world wide (p. 8).

With management's new emphasis on behavior, simulations were developed dealing with its general research use. With this emphasis on behavior, the natural evolution into the social sciences occurred with the development of the "Inter-Nation Simulation," developed by the RAND Corporation. Participants in this game actually engaged in issues concerning politics and crises (Taylor & Walford, 1972, p. 24). Recent simulations have dealt with social issues, both historical and current, where participants have been confronted with examining the origins of World War I ("Alpha Crisis"), the effects of television advertising ("Pace"), and various contemporary social issues ("Women's Lib," "Food and Feedback," and "Watergate").

Through the use of simulations in the physical sciences, the investigative purpose of simulations was developed to its fullest potential. Within the physical sciences all four purposes, education and training, decision making, research, and investigations, have been crystalized. Contemporary simulations within this area are reflected in biology ("Simulation of Biological Processes"), chemistry ("Computer Modeling of Photochemical Smog Formation"), physics ("Simulation for Introductory Physics"), and medical education ("A Simulated Mental Hospital as an Undergraduate Teaching Device"). The list above is only representative of many simulations listed in ERIC, developed in these and other areas within the physical sciences.



Simulations have also been developed and used in such disciplines as mathematics, languages, engineering, education, etc. The field is endless, wherever man seeks knowledge, simulations are and have been developed to assist in gaining the desired knowledge.

#### Educational Uses--General

The field of education has not been void in its use of simulations. Although business is generally given credit for the evolution of simulations from military use, education had been using simulations prior to the American Management Association Symposium on Simulations.

John Dewey in the early 1920's (cited in Boocock & Shild, 1968, p. 56) listed three advantages for the uses of simulation in education as making activities meaningful, relief from boredom and strain, and as a translation of educational progressivism into classroom practices. Chartier (1973) and Braum (1975) echoed these same positions in regards to interest and participation in simulations.

With the added dimension of computer simulations, McIssac and Boardman (1969) stated "simulations will lead to a better understanding of the educational system and that from the improved understanding will come educational practice" (p. 3). Braum (1970) similarly stated that, "Utilization of computer simulation offers the teacher an

opportunity to enrich significantly his students direct learning experiences in areas that are not available otherwise" (p. 151).

Simulations have been developed within most disciplines, and, therefore, the educational aspects of those disciplines have simulations. For an extensive list of simulations for education, see The Guide to Simulation/Games for Education and Training (Zuckerman & Horn, 1973), which lists over 600 simulations by categories.

#### Educational Uses--Administration

Educational administrators in the early 1960's desired a way to train their current and prospective leaders through some method other than lecture and seminar. As the American Association of School Administrators expressed in 1960, "Administration is talked about rather than observed or felt" (Wynn, 1964, p. 170).

The first breakthrough was The Jefferson Township School District Simulation (Wynn, 1964, p. 170). This simulation resembled business simulations from which it was copied (Tansey & Urwin, 1969, p. 9), but it was regarded as the breakthrough that was desired. The simulation itself was designed as an on-the-job experience for 232 elementary school principles which confronted them with "in-basket" items (Wynn, 1964, p. 171). In-basket refers

to situations that are presented to the participant as though they had or were to occur, and the participant must react to the situations through written communications.

Initially simulations were used by universities since most of the development of these training vehicles occurred there. But, with commercial firms and local school districts developing simulations, simulation use occurs within both avenues of educational administration training (pre and post).

Within the area of educational administration, the field of finance was in need of new tools for training, evaluating, and forecasting future directions and trends. The National Education Finance Project developed a computerized financial simulation which was designed as "a management information model . . . as a tool for better decision making . . . to simulate the consequences of alternative decisions in regard to the financing of public elementary and secondary education" (Boardman, Jordan, & Alexander, 1971, p. 1).

Regarded as the pioneer in its area, the NEFP model has been used for instruction in Education Finance classes at the University of New Mexico and the University of Florida. The simulation has also been adapted for management and research uses by the state of New Mexico (Huxel,

1973), and for the province of Sergipe, Brazil (de Mello, 1975). The simulation was used to a limited extent in designing the Florida Educational Finance Program of 1973.

Other simulations have been developed in the area of higher education finance (Gaunt & Haight, 1976; Holdberg, 1973) and many others by various states and organizations to facilitate planning (Education Finance SURC, 1974; Pierce, Garmes, Guthrie, & Kirst, 1975; Odden & Vincent, 1976; Minicucci, 1976; and Ohio Education Review Committee, 1977).

Pierce, Garmes, Guthrie, and Kirst (1975) summarized the major justification for using financial simulation as

A state which undertakes reform of its school finance system faces a large and complicated task. Not only must the present system be analyzed to document any problems or inequities that might exist, but predictions must also be made of how proposed changes will affect local districts in the state. . . . Given this situation, one of the most useful tools a state can have is a simulation which gives it the capacity to quickly and accurately establish the impact of recommended change. (p. 122)

The benefits of computer simulations to educational finance have been cited by many, but they can be summarized as

- 1) knowing the fiscal impact of new policies,
- 2) knowing the impact of changes in existing policies, and
- 3) ability to analyze effects and differences of various financial plans.

Anyone concerned with educational finance, legislators, educators, business managers, school boards, parents, among others, must be able to deal with major policy questions such as those cited by the NEFP (1971), in regards to future planning.

- 1) What pupil population will be served?
- 2) What kinds of programs should be recognized in the state aid program?
- 3) Will necessary variations in unit costs of different educational programs be recognized or ignored in allocating state funds?
- 4) What kind of educational services will be funded in the state plan?
- 5) Will the isolated small schools and the programs of the core city be considered?
- 6) Will state funds be apportioned on the flat grant basis which ignores differences in the wealth of local school districts, or on the equalization basis which provides more state funds per unit of educational need to districts of less wealth than to districts of greater wealth?
- 7) What proportion of school revenue will be provided by the state and what proportion will come from local sources?
- 8) What will be the total cost of the basic state program?
- 9) Where will we get the money to support the basic state program?
- 10) To what extent will the state permit local districts to provide services and experiences not supported in the basic state program? (p. 2)

Finally, before adoption, four criteria have been identified by the Academy for Educational Development (1973) concerning usefulness of a computer simulation model.

- 1) Performance. How effective is the system in providing needed answers? How appropriate is it to stated needs? How well does it reflect institutional policy?
- 2) Utility. How useful is the system? How often will it be used and how many people will participate in its application? Is it flexible enough to accept major changes in organizational structure?
- 3) Time. What is the time required for installation? How much time is required for collecting base data necessary to operate the system? What is the time required to retrieve information?
- 4) Cost. Is the value of the information worth the cost of implementation? Will it save money in terms of time and personnel? Is a model needed at current costs? (p. 27)

### Summary

Equality of educational opportunity is a deeply rooted American ideal. Although long advocated, until recently it was to the exclusion of various groups in our society. The concept now has evolved to mean equal access to educational resources with consideration being given to the needs of each child.

The courts have and are being called upon to judge whether state financial plans do provide for equality of

educational opportunity. Having dismissed education as not being a right guaranteed by the U.S. Constitution, the Supreme Court has placed determination of equity back to state legislatures and courts, with mixed results.

Full state support of education appears to provide the most equitable funding pattern available. However, it should be remembered that allocation methods will determine the degree of equity. The basic tenet of Cubberley that state taxes and state distributions best provide taxpayer equity and program equalization remains true today; only the means of achieving those desired goals remain.

West Virginia does not have full state funding, although it does have a unique "demand" formula. Based on inputs to the first step of the formula for the number of professional educators, the steps that follow it are generated to produce what the legislature must fund. However, the legislature has provided allocations outside the basic formula to supplement programs and bypassed the "add-on" costs of instituting additions within the present formula.

To deal with the complexity of various funding plans and formulas, simulation models, especially computer simulations, facilitate researchers and planners in decision making involving educational finance. Decisions are reflective of short- and long-range effects of alternative

funding patterns and are capable of being analyzed in light of equity/equality criteria.



### CHAPTER III

#### ADAPTATION OF THE NEFP COMPUTER SIMULATION MODEL

##### The NEFP Model

The National Education Finance Project (1971) developed a computer simulation model to facilitate researchers and planners in the area of fiscal planning for public education. The original simulation contained information regarding a 32 district prototype state, and through interaction of the various decisions involving programs, revenues and wealth, alternative financial support models were generated.

##### Data Files

The computer simulation consists of two main files, which are designated as an M FILE and a D FILE. The M FILE is subsequently subdivided into a B FILE and a C FILE. Both the B FILE and the C FILE are storage files for the data analysis. The B FILE contains the base data for the districts, such as demographic information, enrollment counts, et cetera, whereas the C FILE, or calculations

file, stores the results of calculations, which can then be accessed through the command PRINT. The D FILE provides the input decisions, which are then used in the simulation to generate alternative finance models. The input decisions allow the user(s) to make program decisions, distributional decisions, and revenue decisions, with a multitude of variations. It is by the variations that the current plan can be duplicated, or other options generated to allow researchers to examine consequences of decisions.

The output of desired data is accomplished through the interaction of the M FILE and the D FILE. The interaction of these files is achieved through the utilization of three additional files, which are called LSTATE, SSTATE, and STATE. Within these three files are contained the mathematical equations that "cover all possible combinations of input decisions" (de Mello, 1975, p. 71). The LSTATE and the SSTATE are files that relate directly to the NEFP program and represent a total and an abbreviated version of the calculations necessary to run the model. The STATE file on the other hand is a dummy (blank) file, and enables the user(s) to create their own calculation arrays. These files are accessed through the respective commands of LCALC, SCALC, or CALC. The results of any calculation are then subsequently stored in the C FILE

and retrieved by the command PRINT Cxxx (the appropriate file number).

### Other NEFP Capabilities

Several analytical subroutines are currently available to users of the simulation. Other subroutines may be added by linking them to the data sets utilizing standard IBM utilities. Descriptions of the main subroutines currently available to the user are

AVE: This procedure calculates the average of a basic (B) or calculated (C) data array. Initiation of this procedure is invoked by the input "AVE" followed by one space and, at most, one array key.

Example 1: AVE B035

Example 2: AVE C610

CORR: This procedure correlates any of the basic (B) or calculated (C) data arrays using the Pearson Correlation Coefficient. Initiation of this subroutine is invoked by the input "CORR" which must be followed by one space and exactly two array keys separated by a comma.

Example 1: CORR B361,B364

Example 2: CORR B362,C615

Example 3: CORR C500,C845

GRAPH: This procedure is invoked by the key word "GRAPH" followed by one space and up to four basic (B) and/or calculated (C) data codes. One of the data codes may be used for the title which cannot exceed 20 characters in length and is separated from the other data codes by ampersands. This routine causes a histogram to be printed with the decisions numbered along the horizontal axis and the scale along the vertical axis.

Example 1: GRAPH C797,C793,C794,& PROPERTY  
YIELDS &  
Example 2: GRAPH B010,C770  
Example 3: GRAPH C970

RANGE: This procedure calculates the range for any of the basic (B) or calculated (C) data arrays. It is invoked by the input "RANGE" which is followed by one space and, at most, one array key.

Example 1: RANGE B360  
Example 2: RANGE C580

SUM: This procedure calculates the sum of any basic (B) or calculated (C) data array. It is invoked by the input "SUM" and is followed by one space and, at most, one array key.

Example 1: SUM B006  
Example 2: SUM C700

PRINT: This procedure allows the user to print by district, a tabular listing of any basic (B) or calculated (C) data array. Initiation of this routine is invoked by the input "PRINT" followed by one space and, at most, six array keys.

Example 1: PRINT B100,B360,B361,B362,B363,B364  
Example 2: PRINT B100,B360,C990,C991  
Example 3: PRINT C500,C600

Other: Computations may be specified in the input stream to create new calculated data arrays. Placement of the equations must precede the CALC command and be designated as calculated (C) data C994 through C999.

Example 1: C994=B001/C500  
Example 2: C997=C500\*D400+C620

Additionally, the model provides for the subroutine DECISIONS, which retrieves a list of the input decisions, and the subroutine SCORE, which allows the user(s) "to output an evaluation table with an overall model score

for percent of deviation from full equalization and a tax progressivity score" (NEFP, 1971, p. 3). Both the subroutine DECISIONS and SCORE are invoked by use of the key words indicated.

Within the NEFP model are two key subroutines for purposes of use by researchers and planners, and these routines are the "CREATE" and "UPDATE" routines. The CREATE routine enables the user(s) to recreate either the M FILE and/or the D FILE with new data. This is in contrast to the UPDATE routine which enables the user(s) to make alterations within an array in either the M FILE or D FILE. The UPDATE routine is especially useful in updating base data information in the B FILE in subsequent years, so the entire simulation need not be recreated.

#### The West Virginia Model

Having identified information relating to programs and enrollments, special services and modifying factors, receipts and expenditures, and wealth indications as the basic data necessary to run the simulation, data relative to these concepts were collected from the West Virginia State Department of Education, State Department of Transportation, Tax Commissioners Office and the Institute for Educational Finance. Several changes and alterations to

each file in the simulation were required to enable alternatives based on West Virginia basic data to be generated. A sample run of the CREATE routine utilized to create the West Virginia model is included in Appendix A.

#### West Virginia's M FILE

Many new arrays were added to both the B and C FILE, with some of the original arrays having their labels (titles) changed. Likewise, some of the original arrays were deleted due to their inappropriateness for West Virginia. Additionally, since West Virginia contains 55 districts, track size, block size, and logical record length of the program had to be increased to enable handling of the increased amount of data. To facilitate the changes necessary, a new M FILE was created for West Virginia through utilization of the CREATE subroutine.

#### West Virginia's B FILE

This file required extensive changes to accommodate all necessary data. The changes occurred within all sections of this file which included programs and enrollments, special services and modifying factors, receipts and expenditures, and wealth measures. Several additional arrays were included to enable duplication of West Virginia's current enrollments, funding patterns, and

uniquenesses within the state system. The "B" arrays used for West Virginia are listed in Table 3, and the definitions of the arrays can be found in Appendix B. Each B data array contains the key name (Bxxx), a title, and 55 data elements. The data elements represent values associated with respective West Virginia school districts.

In the section of the B FILE designated to store program and enrollment data, it was decided that to accurately account for students by programs, full time equivalency enrollment (FTE) counts would be used. Other enrollment data were unavailable in useful form; however, enrollment and average daily membership arrays are contained within the simulation, should data become available. Additionally, arrays for 10 special education exceptionalities and 4 special education delivery systems were included as selective options for specific accounting of students in those programs. Eight vocational-technical categories were also established for FTE student accounting by programs.

Arrays designated for special services and facilities were also changed and redefined to account for items, such as, revenue distinctions within the school food service program and costs associated with specific aspects of the school transportation program.

TABLE 3  
Basic Data Code Sheet

"B"  
Arrays

001-128      CURRENT ALLOCATIONS

	<u>State</u>	<u>Local</u>
Allocation for Professional Educators	001	
Allocation for Other Personnel--Part A	002	
Allocation for Other Personnel--Part B	003	
Allowance for Fixed Charges	004	
Allowance for Transportation	005	
Allowance for Administrative Costs	006	
Allowance for Other Current Expenses	007	
Allowance for National Average Attainment	008	
General School Fund Distribution	009	
Local Share		010
Incentive for Program Improvement	011	
Supplemental Early Childhood Aides	012	
Supplemental Teachers' Salaries	013	
Supplemental Service and Auxilliary Salaries	014	
Supplemental Aid for Children's Homes	015	
State Aid for Increased Enrollment	016	
Special Education Allocation--Out of Formula Grants	017	
Special Education Allocation--Out of Formula Homebound Instruction	018	
Special Education Allocation--Out of Formula Additional Grants	019	
Special Education Allocation--Out of Formula Aid to RESA	020	
State Aid to RESA	021	
Teacher Education Centers	022	
Vocational Day School (1976)	023	
Vocational Adult Education (1976)	024	
Area Vocational Programs (1976)	025	
Vocational Act of 1968--State (1976)	026	
West Virginia Social Security Work Incentive (1976)	027	
Other State Revenue (1976)	028	



TABLE 3 (continued)

"B"			
Arrays			
030-036	PROPERTY APPRAISED		
	Appraised Property--Nonutility Class I	030	
	Appraised Property--Utility Class I	031	
	Appraised Property--Nonutility Class II	032	
	Appraised Property--Nonutility Class III	033	
	Appraised Property--Utility Class III	034	
	Appraised Property--Nonutility Class IV	035	
	Appraised Property--Utility Class IV	036	
100	DISTRICT	100	
102	DISTRICT IDENTIFICATION	102	
104-109	DEMOGRAPHIC AND SOCIAL		
	Square Miles	104	
	Population, Total (1975)	107	
	Rate of Growth (%) (1970-1975)		
	Enrollment	108	
	Population	109	
110-346	PROGRAMS AND ENROLLMENTS		
	Current Program	<u>ENR</u>	<u>FTE</u>
	Kindergarten		110
	Grades K-12	111	
	Special Education	112	
	Basic		
	4 yr. old	115	117
	Kindergarten	120	122
	Elementary	125	127
	Secondary	130	132
	Special/Exceptional		
	Educable Mentally Retarded	140	142
	Trainable Mentally Retarded	145	147
	Learning Disabilities	150	152
	Behavioral Disorders	155	157
	Physically Handicapped	160	162
	Multiple Handicapped	165	167
	Visually Handicapped	170	172
	Auditorily Handicapped	175	177

TABLE 3 (continued)

"B"  
Arrays

	ENR	FTE
Communication Disorders	180	182
Homebound	185	187
Gifted	190	192
Vocational/Technical		
Agriculture	196	197
Distributive Education	200	202
Health Occupations	205	207
Home Economics	210	212
Business/Office Occupations	215	217
Technical	220	222
Industrial	225	227
Other Vocational (Code 99)	230	232
Special Education Delivery System		
I - Self Contained	235	237
II - Resource	240	242
III - Itinerant	245	247
IV - Optional	250	252
Compensatory		
Low Income	340	345
Low Achievement	341	346
SPECIAL SERVICES AND FACILITIES		
Transportation (1)		
Average Daily Route Miles (1976)	360	
Number of Pupils Transported (1976)	361	
Sparsity Cost Variation	362	
Approved Costs (1977)	363	
Actual Costs (1976)	364	
Transportation (2)		
Average Daily Miles (1976)	065	
Bus Drivers Salaries (1976)	066	
Other Transportation Salaries (1976)	067	
Transportation Costs--Nonsalary (1976)	068	

360-373  
065-068

TABLE 3 (continued)

"B"  
Arrays

Capital Outlay and Debt Service	<u>ENR</u>	<u>FTE</u>			
Approved Project Costs	365				
Actual Project Costs	366				
Depreciation Allowance	367				
Debt Service	368				
School Food Service					
Participating Pupils (Total)	370				
Federal Food Service Revenue	371				
Total Food Service Revenue	372				
Total Food Service Expenditure	373				
380-472					
MODIFYING FACTORS					
Professional Educator Training & Experience*					
Experience Level**	Training Levels***				
	<u>T-1</u>	<u>T-2</u>	<u>T-3</u>	<u>T-4</u>	<u>T-5</u>
E-1	380	381	382	383	384
E-2	385	386	387	388	389
E-3	390	391	392	393	394
E-4	395	396	397	398	399
E-5	400	401	402	403	404
Sparsity					
Grade Levels					
	<u>Under 100</u>	<u>100-150</u>	<u>150-200</u>		
Elementary	440	441	442		
Secondary	450	451	452		
Cost of Living	460				
Achievement					
Below 25th Percentile (%)	470				
Above 75th Percentile (%)	471				

TABLE 3 (continued)

"B"  
Arrays

475-483	RECEIPTS AND EXPENDITURES	
077-080		
	Receipts	
	Federal (1)	
	Title I (1976)	475
	Other (1976)	476
	Federal (2)	
	Forest Reserve (1976)	077
	Federal Impact Aid PL874 (1976)	078
	EHA VI-B Federal (1977)	079
	Vocational Act (1976)	080
	Local	
	Local Regular and Excess Levies	478
	Other Local	479
	Expenditures (K-12)	
	Net Current Expenditures (1976)	480
	Social Security (1976)	481
	Teacher Retirement (1976)	482
	Other Retirement (1976)	483
	Transportation--See Special Services	
	Capital Outlay--See Special Services	
	Debt Service--See Special Services	
	School Food Service--See Special Services	

TABLE 3 (continued)

"B"  
Arrays

---

485-497	WEALTH MEASURES	
	Property--See Property Appraised	
	Personal Income	
	Adjusted Gross Income	
	(1975)	488
	Income Taxes Paid (1975)	489
	Returns Filed (1975)	
	Under \$4,000	490
	\$4,000-\$10,000	491
	Over \$10,000	492
	Sales Tax Paid (1976)	494
	Corporate Income (1976 State	
	Total)	495
	Inheritance Tax (1976 State	
	Total)	496
	Other Taxes Paid (1976 State	
	Total)	497
	Total Gross Sales (1976)	498
	Total Corporate Income (1976)	499

---

\*Full Time Equivalency Count

\*\*Experience Levels: 1 = 0-2 years  
 2 = 3-6 years  
 3 = 7-11 years  
 4 = 12-17 years  
 5 = 18 or more years

\*\*\*Training Levels: 1 = Under a Bachelor's Degree  
 2 = Bachelor's Degree  
 3 = Master's Degree  
 4 = Master's Degree + 30 Semester Hours  
 5 = Doctorate

Within the modifying factors, a Professional Educator Matrix was designed with five training levels and five experience levels. In addition, school sparsity was included for elementary and secondary facilities.

In the receipts and expenditure section, additional arrays were created to discriminate between five specific federal funds and the balance of the federal revenue. The five federal arrays were for Title I, Federal Forest Reserve Funds, Federal Impact Aid, Title VI-B Funds, and Vocational-Educational Act Funds.

In the wealth section, total sales and corporate income were included as additional measures of wealth. Effective buying income per household was deleted due to unavailability of the data.

Within the B FILE two new sections were created due to the uniqueness of West Virginia. The two new sections were for current allocations and property valuation. To generate the current allocations of educational funding, 28 additional arrays had to be created (B001-B028). Likewise, since West Virginia uses several classifications of property, assessment ratios, and tax rates, seven additional arrays were created to facilitate their use in the model (B030-B036).

### West Virginia's C FILE

This file similarly underwent substantial changes to make it compatible with the data contained in the B FILE and the decisions made in the D FILE. A new section was also created that enabled the user(s) to compare dollar differences and dollar differences per unit between the current funding level, and the proposed funding plan. Additionally, several blank arrays were established to enable users to create esoteric calculation storage arrays. A listing of the "C" arrays is found in Table 4 and the definitions of the arrays may be found in Appendix C.

Deviation from full equalization is a calculation contained within the NEFP simulation model, and was included in the West Virginia Model. The deviation is computed on the assumption that "the same total revenue from state and local revenues is available (to all districts) . . . but methods of allocation" and the "proportion from state and local sources are varied" (NEFP, 1971; p. 281). A computation occurs that computes a ratio between total dollars received by a district and the total dollars received in all districts in the state. Simultaneously, another ratio is calculated between district program needs and total state program needs. The relationship between the two ratios is the deviation of each

TABLE 4

Calculated Data Code Sheet

"C"			
Arrays			
500-549	DISTRICT INFORMATION		
	Total Pupils		500
	Total Professional Staff (FTE)		520
	Pupil/Professional Staff Ratio		540
	Assessed Value of Property		
	Nonutility	542	
	Utility	543	
	Total	544	
550-600	PROGRAM UNITS		
	Early Childhood (Basic) (4 yr.+K)	550	
	Grades 1-12 (Basic)	560	
	Special/Exceptional	570	
	Vocational/Technical	580	
	Compensatory (add-on)	590	
	Total All Categories	600	
610-635	SPECIAL SERVICES AND FACILITIES		
		Required Effort	State Allotment
	Transportation	610	615
	Capital Outlay and Debt Service	620	625
	School Food Service		635
640-730	MODIFYING FACTORS		
	Program Adjustments		
	Administrative, Supervisory and Auxiliary Service	640	
	Sparsity	650	
	Educational Training and Experience	660	
	Cost of Living	670 (n.a.)	
	Special Allotments		
	Special Programs	700	
	Innovation	720	
	Achievement	730 (n.a.)	



TABLE 4 (continued)

"C"			
Arrays			
740-965	REVENUE AND EXPENDITURE		
	<u>Dollars</u>	<u>Dollars/ Pupil</u>	<u>Dollars/ Unit</u>
Receipts			
State Dollars			
Basic State Program	740	745	748
Special Serv. and Fac.	750	755	758
Special Allotments	760	765	768
Local Incentive	770	775	778
Total State Program	780	785	788
Local Dollars			
Basic State Program	790	795	798
Special Serv. and Fac.	800	805	808
Local Leeway	810	815	818
Total Local Program	820	825	828
Total Dollars			
Basic State Program (C740+ C790)	830	835	838
Total State/Local Program (C780+C820)	840	845	848
Tax Yield by Source			
State			
	<u>Bases</u>	<u>Yield</u>	
Property			
Nonutility	850		
Utility Assessed Value	851		
Class 1		852	
Class 2		853	
Class 3 & 4		854	
Total Property	855	856	
Personal Income (AGI)		860	
Sales and Gross Receipts		870	
Corporate Income		880	
Estate, Gift, and Other		890	

TABLE 4 (continued)

"C"  
Arrays

	<u>Yield</u>	<u>Yield/ Pupil</u>	<u>Yield/ Unit</u>
Local			
Property			
Class 1 Nonutility	791		
Class 1 Utility	792		
Class 2	793		
Classes 3 & 4 Nonutility	794		
Classes 3 & 4 Utility	796		
Total Property	900	905	908
Personal Income (AGI)	910	915	918
Sales and Gross Receipts	920	925	928
	<u>Dollars</u>	<u>Dollars/ Pupil</u>	
Expenditures			
Net Current Exp. (NCE)	930	935	
NCE, Social Security, Teacher Retirement, and Other	940	945	
NCE, Social Security, Teacher Retirement, Other, and Transportation	950	955	
Total Current Exp. (TCE)	960	965	
969-970	EVALUATION		
Tax Progressivity	969		
Deviation from Full Equalization	970		
971-993	CURRENT EQUALIZATION FORMULA AND COMPARISONS		
	<u>Dollars</u>	<u>Dollars/ Pupil</u>	
Current Formula			
Basic Instruction Program State	971	972	
Transportation	977	978 (per trans- ported pupil)	
Capital Outlay (approved)	979	980	
Total State/Local Dollars (Basic Only)	981	982	

TABLE 4 (continued)

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"C"  
Arrays

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Comparisons	<u>Total Difference</u>	<u>Difference per Pupil</u>
Current Basic State \$ to Proposed Basic State \$	974	985
Current Basic Local \$ to Proposed Basic Local \$	986	987
Current Transportation \$ to Proposed Transportation \$	988	989*
Current Capital Outlay \$ to Proposed Capital Outlay \$	990	991
Total Present State/Local/ Transportation/Capital to Total Proposed State/Local/ Transportation/Capital	992	993

---

\*Per transported pupil.

district from complete equalization. If a district receives more funds than its full fair share under the simulated distribution, the district will receive a positive percent of deviation score. The reverse is the case when less than the districts fair share is received.

Tax progressivity is a calculation contained within the NEFP simulation model that is also contained in the West Virginia model. The progressivity measure is based on two assumptions: (1) the most progressive tax is the income tax, and (2) all taxes should be compared to the income tax to measure their progressive or regressive nature (NEFP, 1971, p. 254).

The progressivity measure was developed by The Tax Foundation, Inc., and was based on a division of all families in the United States whose incomes were less than \$5000 a year and those families whose incomes were more than \$5000 a year. A table was then prepared which compared "the percent of income paid by the lower half of families for each tax with the percent of income paid for that tax by the upper half of families" (NEFP, 1971, p. 255). Ratios were then developed which indicated individual and corporate income taxes as the "only progressive tax" (NEFP, 1971, p. 266). By arbitrarily assigning a score of 50 to income taxes, all other taxes

were then proportionately assigned scores relative to income taxes. It is the relationship of these measures in the simulation that computes the progressivity score for the input decisions regarding the simulated state structure.

The Lorenz Curve and Gini Coefficient are economic measures that have been adapted and used in public school finance, and are included within the West Virginia Model. These measures have received notoriety since they have been characterized as being able to operationalize the concept of fiscal neutrality.

The common example used illustrates the Lorenz Curve by plotting data for cumulative porportion of pupils in districts and the cumulative proportion of expenditures for districts on coordinate axes. The horizontal axis reflects pupils, and the vertical axis reflects expenditures. The districts are then sorted in ascending order by wealth per pupil. If all districts were the same, then a straight line would be plotted. However, if a sagging curve developed, then lesser amounts spent in poorer districts would be indicated. The measure of the latter inequality is called the Gini Coefficient (or Gini Index or Index of Concentration). The general formula for the Gini Coefficient being

$$G = \frac{\text{Area A}}{\text{Area (A + B)}}, \text{ where}$$

A = the area between the sagging Lorenz curve and the line marking the 45 degree angle, and

B = the area below area A and above the horizontal axis. (Johns, 1977, p. 505)

If the value of G is 0, then equality exists, since all districts would be spending the same per pupil. However, if the index reaches 1.0, then complete inequity exists. Johns (1977) noted that if the index is computed using weighted pupil, the measure becomes one of fiscal equalization rather than fiscal neutrality (p. 505).

#### West Virginia D FILE

All three areas within the D FILE were changed, which included program decisions, distributional decisions, and revenue decisions. The changes were implemented to enable the simulation to be reflective of legal requirements, program structure, and fiscal policies of the state of West Virginia. Items are included in the decision set where data for the decision is not available (n.a.). These items are included to enable researchers and planners to further modify the model. The input decisions relative to West Virginia are included in Appendix D.

All three alternative decision areas, program unit, special services and facilities, and modifying factors,

were adapted within the program decisions section. Within the program unit area, decisions relative to early childhood are only designated as including kindergarten, since that is the current program offered within the state. Full time equivalency (FTE) is the only enrollment figure available within the simulation since other enrollment measures were unavailable in unduplicated counts. The division of grade-levels was also amended to differentiate between elementary and secondary only, and decisions relative to program weight for special education and vocational technical were increased to accommodate the increased number of options.

Special services and facilities were also modified to allow for the various classes of property, assessment rates, and appropriate millages that affect options within the transportation section and the capital outlay/debt service section. Consideration of school sparsity was limited to elementary and secondary classifications utilized by the NEFP enrollment groups.

Within the distributional decision section, modification was necessary to again account for the various classes of property, assessment rates, and appropriate millages. Similarly, the revenue decision section was modified for the various classes of property, assessment rates, and appropriate millages.

Figure 2 illustrates a decision selection of the West Virginia model utilizing an unweighted pupil concept, whereas Figure 3 illustrates weighting of pupil enrollments. Both tables are presented here to illustrate format, and are not intended for analysis.

### STATE Equations

The STATE file was created by the inclusion of the mathematical equations that enabled the interaction of the newly created input decisions (D FILE) on the newly created basic data (B FILE). The STATE file equations are contained in Appendix E.

Having identified and collected the data necessary to simulate the current system and provide alternative patterns, an analysis of the current formula and alternative plans will be discussed in regard to equality of educational opportunity and taxpayer equity in the ensuing chapter.



## [ JOB CONTROL LANGUAGE ]

## PASSWORD

D102=1	Kindergarten
D105=1	Full Time Equivalent
D110=1	Unweighted Pupils
D163=80	Transportation Fixed % of Actual Cost
D170=100	Capital Outlay Grant/Pupil
D200=5	Adjustment Admin., Superv., & Aux. Personnel %
D220=1	Adjustment Professional Training & Experience
D252=80	Allowance for Physical Handicapped
D400=865	Basic State Program Dollars/Unit
D435=1	Uniform Tax with Variable State Dollars
D610=47.5	Nonutility, Appraised Property %
D611=97.5	Utility, Appraised Property %
D612=19.6	Required Effort, Property Class 1
D613=39.2	Required Effort, Property Class 2
D614=78.4	Required Effort, Property Class 3 & 4

## DECISIONS

## CALC

[ Specify output tables and/or analytical subroutines ]

Figure 2. Sample Input of the West Virginia School Finance Computer Simulation Model Utilizing an Unweighted Pupil Unit

## [ JOB CONTROL LANGUAGE ]

## PASSWORD

D102=1	Kindergarten
D105=1	Full Time Equivalent
D116=1	County by Malady
D122=1.4	Kindergarten Weight
D123=1.0	Elementary Weight
D124=1.4	Secondary Weight
D126=1.9	Educable Mentally Handicapped
D127=2.1	Trainable Mentally Handicapped
D128=3.6	Learning Disabilities
D129=2.2	Behavioral Disorders
D130=3.6	Physically Handicapped
D131=2.7	Multiple Handicapped
D132=3.0	Visually Handicapped
D133=3.0	Auditorily Handicapped
D134=1.2	Communications Disorders
D135=1.4	Homebound
D136=1.1	Gifted
D186=2.1	Agriculture
D187=1.5	Distributive Education
D188=1.6	Health Occupations
D189=1.4	Home Economics
D190=1.4	Business/Office Occupations
D191=2.2	Technical
D192=2.2	Industrial
D193=1.5	Other Vocational (Code 99)
D163=80	Transportation on Fixed % of Actual Cost
D170=100	Capital Outlay Grant/Pupil
D200=5	Adjustment Admin., Superv., & Aux. Personnel %
D220=1	Adjustment Professional Training & Experience
D400=865	Basic State Program Dollars/Unit
D435=1	Uniform Tax with Variable State
D610=47.5	Nonutility, Appraised Property %
D611=97.5	Utility, Appraised Property %
D612=19.6	Required Effort, Property Class 1
D613=39.2	Required Effort, Property Class 2
D614=78.4	Required Effort, Property Class 3 & 4

## DECISIONS

## CALC

[ Specify output tables and/or analytical subroutines ]

Figure 3. Sample Input of the West Virginia School Finance Computer Simulation Model Utilizing a Weighted Pupil Unit

## CHAPTER IV

### ANALYSIS OF EQUAL EDUCATIONAL OPPORTUNITY AND TAXPAYER EQUITY

Prior to presentation and analysis of equal educational opportunity and taxpayer equity, the current West Virginia public school finance plan will be presented and analyzed in relationship to the concepts of equality of educational opportunity and taxpayer equity. These two concepts are achieved when

(1) the varying educational needs of the student population are taken into consideration in the method of allocation of funds to the expending units, and (2) the variation of the ability among the local school districts to support education is reduced or eliminated through the utilization of state resources. (NEFP, 1971, p. 238)

These definitions of the two respective concepts will be utilized throughout the analysis as a frame of reference for the reader. The NEFP (1971) additionally stated that program and taxpayer equity criteria for a state's public school funding plan are accomplished when the plan includes all current expenditures, recognition of variations in per pupil costs of specialized programs, recognition of factors unique to districts (sparsity and density), a balanced and comprehensive taxing structure, and "Utilizes objective measures in allocating state school funds" (p. 233).

This chapter will initially present and analyze the status of West Virginia public school finance in regard to equality of opportunity and taxpayer equity. Additionally, the concepts of equality of educational opportunity and taxpayer equity will be demonstrated and analyzed, respectively, utilizing alternative decisions within the simulation model. Finally, four alternative financing plans (district power equalizing, guaranteed yield, percentage equalizing, and foundation) will be presented, using West Virginia data, and analyzed in relationship to the concepts of equality of educational opportunity and taxpayer equity.

#### Present School Finance in West Virginia

Within the current state system of financing education in West Virginia, professional educator salaries are the primary determinant of legislative appropriations for school support. On the other hand, student enrollment is utilized extensively as the prime determinant of the state distribution of school support. The distributional aspects of the formula are presented first due to the consideration of student enrollment and are analyzed in regard to equality of educational opportunity.

According to the definition already established as to the concept of equality of educational opportunity and

student needs, it was stated that an equitable plan considers student needs in the allocation of funds to districts. West Virginia does consider students specifically within the distributional aspects of the formula.

The computation of student enrollment used for the distribution of funds involves data collected by the local school districts in the third month of the academic year. Each district collects and reports to the state finance office full time equivalency enrollment in kindergarten programs and head count enrollment figures for grades one through twelve. The state special education department then supplies a "Certified Special Education Student" count for each district to the state finance office, which in turn is doubled and then added to the kindergarten and grades one through twelve counts received from the districts. The net effect of the adjustment is a triple weighting for special education students, and an enrollment count which is designated as "Third Month Adjusted Enrollment."

Upon initial examination, the report generated by the local school districts for students in grades one through twelve appears to express the philosophy that "a child is a child" for purposes of funding although providing equality of educational opportunity through allocation of equal dollars, specific needs of children are seemingly disregarded. But, further scrutiny revealed

an FTE count for kindergarten and the weighted special education count, which illustrates a concern for the unique needs of special education students and part-time kindergarten programs.

The triple weighting for special education has a more substantial impact when considering that special education students receive the triple weighting whether they are involved in a program for one hour a day, or the entire day. Additionally, higher cost special education programs receive the same triple weighting for their students as do substantially lower cost special education programs. Many studies have been conducted which have analyzed the costs of special education programs (Rossmiller, Hale, and Frohreich, 1970), as well as total program costs (NEFP Kentucky, 1973; NEFP South Dakota, 1973). The conclusions of the researchers indicate that different programs cost different amounts to provide for the needs of the students in those programs. In the current West Virginia plan, student needs are considered only with regard to special education, and then on an equal basis within the program area. Variations for exceptionalities within special education programs, kindergarten, vocational programs, or other subdivisions are absent within the basic state foundation program and raise concern as to meeting "the varying educational needs of the student population" (NEFP, 1971, p. 238).

In analyzing monies allocated by the legislature, professional educator salaries are used extensively as the basis upon which the basic foundation program is computed. Additionally, money is allocated "outside of the formula" for in-formula salaries for professional and service and auxiliary personnel. The rationale behind out-of-formula allocations appears to be that in allocating monies to specific categories outside of the basic formula, the legislature prevents the "spin-off" effect of instituting increases in all aspects of the basic formula. The 1976-1977 state aid formula computations for "in formal" and "out of formula" allocations are presented in Appendix E, with Table 5 illustrating the primary computations upon which the state aid distribution is based.

The relationship between professional educators salaries supported under the plan is limited to a ratio of 55 professionals to 1,000 students. As is evident, being based on a professional educator count, the ratios between professional staff and pupils varies from a low of 41.01 to a high of 53.96 per 1,000 students. Using professional educators salaries, as the basic cost element, reflects a wide variation in dollars distributed to school districts without regard for relative needs of students.

Table 6 is presented to illustrate the amount of state and local dollars per pupil available to the districts (with and without special levies). Table 6 is

TABLE 5

Preliminary Computations  
Public School Support Program  
Supplementary Information  
1976-1977

County	1975-1976 3rd month adjusted enrollment	1975-1976 3rd month professional educators	1975-1976 professional educators ratio/1,000 pupils
Barbour	3,910	187.83	48.04
Berkeley	10,930	503.70	46.08
Boone	6,966	342.50	49.17
Braxton	3,570	170.00	47.62
Brooke	6,798	328.85	48.37
Cabell	21,587	1,164.79	53.96
Calhoun	2,154	111.10	51.58
Clay	2,887	118.40	41.01
Doddridge	1,950	91.75	47.05
Fayette	13,685	667.13	48.75
Gilmer	2,081	92.85	44.62
Grant	2,361	122.10	51.72
Greenbrier	7,954	395.77	49.76
Hampshire	3,445	150.83	43.78
Hancock	9,100	473.60	52.04
Hardy	2,805	137.10	48.88
Harrison	16,655	788.00	47.31
Jackson	6,504	303.75	46.70
Jefferson	6,340	320.44	50.54
Kanawha	49,671	2,577.93	51.90
Lewis	3,920	191.00	48.72
Lincoln	6,252	273.06	43.68
Logan	11,988	571.00	47.63
Marion	12,566	607.00	48.30
Marshall	9,270	467.50	50.43
Mason	6,833	337.26	49.36
Mercer	15,435	775.19	50.22
Mineral	7,166	321.60	44.88
Mingo	10,121	448.50	44.31
Monongalia	12,428	611.83	49.23



TABLE 5 (continued)

County	1975-1976 3rd month adjusted enrollment	1975-1976 3rd month professional educators	1975-1976 professional educators ratio/1,000 pupils
Monroe	2,919	129.10	44.23
Morgan	2,430	112.90	46.46
McDowell	13,635	687.00	50.39
Nicholas	6,660	302.60	45.44
Ohio	10,551	535.50	50.75
Pendleton	1,846	97.20	52.65
Pleasants	2,068	108.53	52.48
Pocahontas	2,378	122.21	51.39
Preston	7,644	350.27	45.82
Putnam	8,793	392.50	44.64
Raleigh	18,416	862.50	46.83
Randolph	6,646	300.20	45.17
Ritchie	2,565	127.00	49.51
Roane	3,877	176.00	45.40
Summers	3,503	168.00	47.96
Taylor	4,160	184.25	44.29
Tucker	2,242	102.50	45.72
Tyler	3,152	144.50	45.84
Upshur	4,991	225.50	45.18
Wayne	11,446	548.50	47.92
Webster	3,244	147.00	45.31
Wetzel	5,668	263.29	46.45
Wirt	1,350	65.40	48.44
Wood	21,707	1,074.70	49.51
Wyoming	9,977	469.10	47.02
State	439,200	21,348.61	48.61

Note: Data obtained from School Finance Division of the West Virginia Department of Education.

TABLE 6  
State and Local Funds  
per Pupil  
1976-1977

County	State aid plus total property tax dollars per pupil	State aid plus regular levy dollars per pupil
Grant	\$1,350.82	\$993.52
Marshall	1,114.13	856.92
Pleasants	1,077.91	897.67
Hancock	1,077.13	845.05
Pendleton	1,065.83	974.45
Kanawha	1,055.90	863.13
Cabell	1,042.23	864.36
Wirt	1,039.56	913.52
Doddridge	1,017.96	873.96
Monongalia	1,013.98	832.20
Putnam	996.91	777.54
Boone	993.70	839.85
Ohio	993.05	806.29
Jackson	971.71	805.54
Harrison	969.01	781.01
Ritchie	962.89	879.54
Lewis	957.56	870.44
Brooke	955.88	811.47
Mercer	954.24	840.15
Jefferson	953.55	869.82
Hardy	953.55	869.82
Pocahontas	953.28	953.28
Mason	949.98	818.15
Morgan	941.91	827.16
Marion	937.70	788.29
Wood	936.81	804.22
Wyoming	933.23	807.32
McDowell	926.92	817.20
Greenbrier	924.24	853.67
Summers	919.21	814.90

TABLE 6 (continued)

County	State aid plus total property tax dollars per pupil	State aid plus regular levy dollars per pupil
Preston	918.16	800.38
Fayette	902.21	787.83
Hampshire	897.03	821.75
Monroe	896.07	833.71
Raleigh	887.83	786.15
Calhoun	885.17	885.17
Logan	883.77	789.17
Mineral	880.31	774.97
Braxton	873.94	873.94
Berkeley	873.06	758.33
Wetzel	870.09	752.55
Wayne	870.04	779.06
Barbour	864.42	864.42
Mingo	861.73	773.31
Tyler	860.89	772.20
Webster	855.28	855.28
Nicholas	853.02	798.12
Gilmer	846.21	846.21
Lincoln	833.16	761.03
Taylor	826.30	777.61
Randolph	825.21	761.10
Roane	820.28	820.28
Upshur	795.77	795.77
Clay	788.69	788.69
Tucker	771.50	771.50
State	959.55	819.17

Note: Counties are ranked according to State Aid Plus Total Property Tax Dollars Per Pupil (from data obtained from School Finance Division of the West Virginia Department of Education).

reflective of the variations among the district's ability to provide for student needs, which ranged from \$1,351 to \$772 when considering state aid and all property tax per pupil, and \$994 to \$753 when only considering regular levy plus state aid per pupil. These values correlated with the professional educator staff ratio of Table 5, as .6967 and .6321, respectively, at the .001 significance level. These correlations indicate a strong positive relationship between state aid for professional educators and property levies, with the inclusion of special levies accounting for the higher correlation value.

The correlations indicate that as the ratio of professional educators increases, the amount of state and local support increases. The difference between the first and second correlations is the inclusion of the special levy in the first, and its omission in the second. The special levy, which the taxpayers impose upon themselves, allows districts to increase their tax rate up to 100 percent, for up to five years. However, to evaluate the question of taxpayer equity, additional analysis was conducted to determine the relationship between professional educators and the regular and special local levies.

Table 7 illustrates the weighted property values per pupil, the regular levy per pupil, the special levy per pupil, and the total levy per pupil.

According to Table 7, there appears to be a wide variation per pupil in property values throughout the state. This fact further reflects a wide variation in revenue generated per pupil based on the regular levy; from a high of \$420 per pupil to a low of \$72 dollars per pupil. This six-to-one relationship, when correlated to professional staff ratios, showed a .4183 correlation at the .001 significance level. Special levies correlated at .4634 with the professional educator ratio, at the .001 significance level. When considering all levies, the property tax production ranges from \$777 per pupil to \$86 per pupil, which is more than a nine-to-one relationship. These ranges and correlations indicate that a relationship exists between property wealth of a district, as measured by their levies, and the number of professional educators. Since the number of professional educators employed affects the amount of state aid each district receives, the statistically significant correlations indicate that property wealthy districts receive substantial amounts of state aid through a small special levy due to the number of professional educators employed and their per pupil valuation as compared to property poor districts.

It is apparent from Table 7 that districts that do not take advantage of the special levy are placed at a disadvantage over the counties that do. In addition, the

TABLE 7  
 Weighted Values and Revenue  
 from Local Property Tax  
 1976-1977

County	Weighted values per pupil	Regular levy per pupil	Special levy per pupil	Total levy per pupil
Grant	\$192,774	\$420.29	\$357.30	\$777.59
Marshall	117,972	257.21	257.21	514.42
Hancock	102,318	223.08	223.08	446.16
Putnam	100,616	219.37	219.37	438.74
Kanawha	89,833	192.77	192.77	385.54
Ohio	86,572	186.76	186.76	373.52
Harrison	86,230	188.00	188.00	376.00
Monongalia	83,376	181.78	--	181.78
Pleasants	82,670	180.24	180.24	360.48
Gilmer	81,645	178.01	--	178.01
Cabell	81,581	177.87	177.87	355.74
Lewis	79,915	174.24	87.12	261.36
Jackson	76,216	166.17	166.17	322.34
Boone	70,564	153.85	153.85	307.70
Webster	69,763	144.09	--	144.09
Hampshire	69,025	150.49	75.28	225.77
Marion	68,528	149.41	149.41	298.82
Brooke	66,237	144.41	144.41	288.82
Doddridge	66,046	144.00	144.00	288.00
Greenbrier	64,732	141.13	70.57	211.70
Jefferson	62,663	136.62	119.06	255.68
Pocahontas	62,464	136.19	--	136.19
Wood	61,461	132.59	132.59	265.18
Mason	60,464	131.83	131.83	263.66
Morgan	60,398	131.68	114.75	246.43
Berkeley	60,382	131.65	114.73	246.38
Ritchie	58,814	128.23	83.35	211.58
Hardy	58,760	128.11	83.73	211.84
Wyoming	58,366	125.91	125.91	251.82
Wirt	57,811	126.04	126.04	252.08

TABLE 7 (continued)

County	Weighted values per pupil	Regular levy per pupil	Special levy per pupil	Total levy per pupil
Nicholas	57,788	125.99	54.90	180.89
Upshur	55,248	120.45	--	120.45
Roane	55,068	120.06	--	120.06
Preston	54,024	117.78	117.78	235.56
Wetzel	53,912	117.54	117.54	235.08
Calhoun	53,084	115.74	--	115.74
Fayette	53,022	114.38	114.38	228.76
Pendleton	52,392	114.23	91.38	205.61
Mercer	52,327	114.09	114.09	228.18
Barbour	50,705	110.55	--	110.55
McDowell	50,323	109.72	109.72	219.44
Clay	50,293	109.65	--	109.65
Braxton	50,074	109.17	--	109.17
Mineral	48,313	105.34	105.34	210.68
Randolph	48,203	105.10	64.11	169.21
Summers	47,852	104.31	104.31	208.62
Raleigh	46,637	101.68	101.68	203.36
Logan	44,752	94.49	94.49	188.98
Taylor	44,667	97.39	48.69	146.08
Wayne	41,728	90.98	90.98	181.96
Mingo	40,986	88.42	88.42	176.84
Monroe	40,822	89.00	62.36	151.36
Tyler	40,679	88.69	88.69	117.38
Tucker	39,612	86.36	--	86.36
Lincoln	33,082	72.13	72.13	114.26
State Average	67,181	145.77	140.38	286.15

Note: Counties are rank ordered by weighted assessed property values (Class 1 x 1, Class 2 x 2, Classes 3 & 4 x 4).

fact that Grant county can raise more through their basic levy than 51 other counties can raise through their respective combined regular and excess levies, reflects the magnitude of a taxpayer equity problem. For if as the definition implies, variations in ability among school districts should be reduced or eliminated through use of state sources, then the wide variation reflected in Table 7 between property richest and property poorest per pupil amounts should be equalized by the state beyond the required (regular) levy which is currently equalized.

. Taxpayer equity also involves consideration of tax sources utilized throughout the state to generate all state revenue. The current education plan is funded on a federal/state/local basis, with the 1976-1977 support levels being 11.7 percent, 56.6 percent, and 31.7 percent, respectively. Of the local share, 99.5 percent is derived from the ad valorem property tax, which has been criticized as an inequitable, regressive tax (Due, 1970; Alexander, 1977). Some arguments against broad uses of the property tax have included findings that this form of taxation provides for unequal treatment of equals, has a low correlation between taxable property and wealth or income, and places a regressive burden on property relative to income (Due, 1970, pp. 297-298).



State-wide, the general revenue fund is created through the collection of taxes, fees, and interest on various items. Of the total state money collected for the general revenue fund for fiscal year 1976, 65 percent of the monies were collected through various types of sales and gross receipts taxes, 23 percent of the monies were collected through income taxes (personal and corporate), 5 percent of the monies were collected as excise taxes, 1 percent of the monies were collected through inheritance taxes, 2 percent of the monies were collected from racing taxes, and 4 percent of the monies were collected from other miscellaneous sources. The other sources included such categories as department collections, Boards and Commissions, interest on investments, and so forth. With the first four groups accounting for approximately 93 percent of the general revenue fund, the regressive/progressive characteristics of each will be considered in relationship to the concept of taxpayer equity.

Of the 65 percent of sales and gross receipts taxes collected, 31 percent of that total was raised through the consumer sales tax and use tax. The balance of the money was raised from the Business and Occupations Tax and Insurance Tax. The consumer sales tax and use tax of 3 percent are imposed on all West Virginia residents on purchases inside and outside the state, respectively. The Business and Occupations Tax and Insurance Tax are

levies against corporations doing business in the state of West Virginia. The Business and Occupations Tax applies a uniform levy upon various classes of producers based on the gross proceeds of production and sales, and gross income. Similarly, the Insurance Tax imposes a tax on all insurance companies in the state based on gross premium receipts. These taxes have also been criticized in regard to equity criteria since an excessive burden is placed on low income groups and those families who spend a high percent of their income due to family circumstances (i.e., number of children) on taxable items. The burden is reflected directly by the consumer sales tax, and indirectly by the gross receipts tax, "to the extent that they are shifted they have distributional effects comparable to those of sales taxes" (Due, 1970, p. 232).

Income taxes which accounted for 23 percent of the general fund were based on 13 percent of those receipts from corporate net income taxes (which includes Carrier Income), and 87 percent from the personal net income tax. Generally, due to their relationship to wealth as measured by income, allowance for privileged adjustments (basic exemption, interest paid, etc.), and progressive rate application, the burden on lower income groups is reduced. These are some of the reasons why, in comparison to other tax bases, the income tax is considered the most equitable.

Excise taxes, which are usually confined to taxes on cigarettes, liquor, and fuel products, accounted for approximately 5 percent of the general fund. Due (1970) classified these taxes as being substantially productive, being popularly accepted, and having "minimal danger to economic development" (p. 316). The equity of "use" taxes is difficult to determine since, except for motor fuel, most may be regarded as luxuries.

Since more than 65 percent of the state general revenue fund is collected from sales and gross receipts taxes, one may conclude that excessive burden is placed on lower income groups (directly and indirectly). The sales tax is proportional in its application but regressive in relation to income, i.e., low-income persons pay a larger percent of their income for sales taxes.

### Summary

West Virginia's current system of financing education, by providing equal amounts of money for students, considers all students as having the same needs, with the exception of special education students. But the additional weighting for special education students is also allocated regardless of grade, exceptionality, or type of delivery system. Similarly, the basic program allows for no variation based on grade or other program involvement

(i.e., vocational education). Additionally, since the present state aid plan is based on professional educator salaries, and since the ratio of professional educators to district wealth is highly correlated, there appears to be some questionable equity in regard to the concept of fiscal neutrality and equality of educational opportunity.

Taxpayer equity is also questionable when one considers the variations of amounts raised and special levy options of the various school districts. This fact, in conjunction with a tax base that is highly dependent on tax sources that place more of a burden on lower income groups, calls for further research into alternatives and analysis of equality of educational opportunity and taxpayer equity relative to the state of West Virginia.

#### Analyses of Simulated Alternatives

There are four major methods of state-local support plans for education currently in use among the states: foundation, percentage equalizing, district power equalizing (DPE), and guaranteed yield. Johns (1968) and others have demonstrated that in their purest form, all of the basic programs converge mathematically into essentially the same equation. The differentiation of each being a function of the definitions employed within the particular

formula. An example of one type of definitional problem encountered is the student support unit, e.g., should students be accounted for funding purposes on the basis of average daily attendance, average daily membership, or full time equivalency?

For purposes of this analysis district power equalizing (DPE) will be omitted from consideration. DPE will not be analyzed since the criteria of equal educational opportunity and taxpayer equity are difficult to relate to the pure form of DPE. District power equalizing operates under three basic assumptions: (1) that the state and local government share in providing the money to budget a school district, (2) that the size of the school district budget should be determined by the school district and not the state, and (3) that the state share of the locally determined budget should be greater in poorer districts (Benson, 1975). Assumptions one and three provide researchers no problem in regard to either equality of educational opportunity or taxpayer equity. The problem emerges in analyzing the second assumption. With the local school district determining the financial support of their school system, the quality of a child's education and the meeting of needs are left to the discretion of the district, or become a function of its ability to support the educational program. Being a district function results

in variations among districts in meeting children's needs. Districts that have substantially greater wealth bases are able to support programs to a greater extent than can poorer districts. Because of the variations, taxpayer equity also becomes a relative term, since wealthy districts can generate a higher level of support at lower rates than can poor districts; likewise, poor districts are not always able to tax themselves as heavily for education as wealthy districts.

Former North Carolina Governor Terry Sanford (cited in Weiss, 1969) expressed his concern for this type of plan when he stated

It is not enough to have the finest school system in the country if the adjoining district has one of the worst. Ultimately the product of the weak district will dilute the prosperity of the more fortunate products of the excellent system. Correcting this kind of damaging inequity requires State action. (p. 31)

Similar concern was expressed by Hickrod, Hubbard, and Yang (1974) when they summarized some of their objections to this type of financial plan as:

- (1) It may result in increased social stratification and geographic segregation of social classes as the different social strata each seek the tax rate or expenditure level they prefer.
- (2) Local decision-makers may not or cannot meet the needs of their local districts, even if those needs clearly exist.
- (3) Reward for local effort formulas might also stimulate local property taxation, and this would be directly counter to a strong desire for local property tax relief.

- (4) It is possible that it will be the districts with the higher income families that raise their tax rates in response to the reward offered by the state rather than districts with income poor families.
- (5) There is a special problem of low income households located in property affluent school districts. . . the wealthy district might decide to increase their generally low tax effort in order to obtain more state aid.
- (6) Students of general local public finance have never been especially pleased with these educational local incentive grants. (They feel the emphasis should be on other social services such as police, fire, and health)
- (7) They might have the effect of maintaining small inefficient school districts since the state would be rewarding higher tax rates resulting from diseconomies of scale. (pp. 30-31)

As Coons et al. (1970) expressed when they proposed the plan, "it operates by making dollars per pupil a function of effort alone" (p. 202). However, as Hickrod et al. (1974) summarized, "the aspiration level of the citizens in a school district should not be the primary determinants of the level of spending" (p. 32). Alexander and Jordan (1976) also noted concern when they stated that theoretically a district could put forth no effort; therefore, have no educational program, and thusly, "the state equalizes nothing" (p. 357).

Two basic concepts have been discussed throughout this study, and will be used in the analysis of the alternatives; equality of educational opportunity and taxpayer

equity. The first three patterns that are analyzed are the unweighted foundation program, the unweighted percentage equalizing program, and the guaranteed yield program, relative to formula convergence and implications for equality of educational opportunity. The fourth pattern analyzed was the foundation program used in pattern one, except that pupils were weighted by program. That analysis provided an evaluation of the concepts of equality of educational opportunity and distributional equity. The fifth and sixth patterns, using an unweighted foundation program, were used to analyze the concept of taxpayer equity. It should be remembered that the patterns presented are used in relationship to the concepts mentioned, and are generated to further illustrate the potential of the simulation as a management and research tool.

#### Variations Between Plans

The literature has provided a basis for the belief that all formulas, in their purest form, converge into essentially the same formula (Johns, 1968; NEFP, 1971; Cohn, 1974). The purpose of the first three patterns presented is to demonstrate the convergence of the foundation program, percentage equalizing program, and guaranteed yield program, and discuss the implications of these unweighted formulas relative to the concept of equality of educational opportunity.



Pattern I. This pattern was used to demonstrate the distributional effects of an unweighted foundation program using data relative to the state of West Virginia. The pattern consisted of the following decisions:

D105=1	Full time equivalency enrollment
D110=1	Unweighted pupil counts
D116=1	Special education county by malady
D400=1000	Amount per unit for the basic state program
D435=1	Uniform local tax rate plus variable state grant to support state basic program
D610=47.5	Uniform local tax rate to be applied on all nonutility property
D611=97.5	Uniform local tax rate to be applied on all utility property
D612=1.96	Local mills required to be levied on Class I property
D613=3.92	Local mills required to be levied on Class II property
D614=7.84	Local mills required to be levied on Classes III and IV property

This pattern produced a state education program that would cost over 373.9 million dollars. Due to the fact that all units (FTE students) were unweighted, each unit received 1000 dollars each, thus having a zero deviation from full equalization score for all districts. The total cost of the state program is presented in Table 8, along with the appropriate figures reflecting patterns II and III.

Pattern II. This pattern was used to demonstrate the distributional effects of an unweighted percentage equalizing program using data relative to the state of West Virginia. The pattern consisted of the following decisions:

TABLE 8

Total Program Dollars by  
Funding Pattern

District	Total Program Dollars		
	Pattern I total	Pattern II total	Pattern III total
Barbour	\$ 3,160,300	\$ 3,160,300	\$ 3,160,300
Berkeley	8,552,500	8,552,500	8,552,500
Boone	6,020,000	6,020,000	6,020,000
Braxton	2,833,800	2,833,800	2,833,800
Brooke	5,912,000	5,912,000	5,912,000
Cabell	18,548,600	18,548,600	18,548,600
Calhoun	1,585,500	1,585,500	1,585,500
Clay	2,565,000	2,565,000	2,565,000
Doddridge	1,503,100	1,503,100	1,503,100
Fayette	11,830,000	11,830,000	11,830,000
Gilmer	1,500,600	1,500,600	1,500,600
Grant	1,969,500	1,969,500	1,969,500
Greenbrier	7,450,000	7,450,000	7,450,000
Hampshire	2,725,000	2,725,000	2,725,000
Hancock	8,032,000	8,032,000	8,032,000
Hardy	2,094,500	2,094,500	2,094,500
Harrison	14,420,500	14,420,500	14,420,000
Jackson	5,428,500	5,428,500	5,428,500
Jefferson	5,377,500	5,377,500	5,377,500
Kanawha	42,968,800	42,968,800	42,968,800
Lewis	3,512,000	3,512,000	3,512,000
Lincoln	5,148,000	5,148,000	5,148,000
Logan	10,954,500	10,954,500	10,954,000
Marion	11,413,600	11,413,600	11,413,600
Marshall	7,620,200	7,620,200	7,620,200
Mason	5,510,000	5,510,000	5,510,000
Mercer	13,608,000	13,608,000	13,608,000
Mineral	5,535,000	5,535,000	5,535,000
Mingo	8,787,800	8,787,800	8,787,800
Monongalia	10,215,700	10,215,700	10,215,700

TABLE 8 (continued)

District	Total Program Dollars		
	Pattern I total	Pattern II total	Pattern III total
Monroe	2,294,000	2,294,000	2,294,000
Morgan	2,039,000	2,039,000	2,039,000
McDowell	12,036,000	12,036,000	12,036,000
Nicholas	5,953,200	5,953,200	5,953,200
Ohio	8,489,000	8,489,000	8,489,000
Pendleton	1,439,500	1,439,500	1,439,500
Pleasants	1,648,000	1,648,000	1,648,000
Pocahontas	1,913,500	1,913,500	1,913,500
Preston	6,335,000	6,335,000	6,335,000
Putnam	7,290,000	7,290,000	7,290,000
Raleigh	16,330,200	16,330,200	16,330,200
Randolph	5,797,000	5,797,000	5,797,000
Ritchie	2,145,000	2,145,000	2,145,000
Roane	3,052,500	3,052,500	3,052,500
Summers	2,735,200	2,735,200	2,735,200
Taylor	3,265,500	3,265,500	3,265,500
Tucker	1,700,400	1,700,400	1,700,400
Tyler	2,332,500	2,332,500	2,332,500
Upshur	4,289,500	4,289,500	4,289,500
Wayne	9,697,000	9,697,000	9,697,000
Webster	2,695,000	2,695,000	2,695,000
Wetzel	4,822,000	4,822,000	4,822,000
Wirt	1,283,000	1,283,000	1,283,000
Wood	19,181,400	19,181,400	19,181,400
Wyoming	8,361,000	8,361,000	8,361,000
TOTAL	373,906,900	373,906,900	373,906,900

D105=1	Full time equivalency enrollment
D110=1	Unweighted pupil counts
D116=1	Special education count by malady
D400=1000	Amount per unit for the basic state program
D440=1	Percentage state and local sharing of the cost of the basic state program
D445=100	Percentage of the property tax to be used in the computation
D454=100	Percentage of the FTE unit to be used in the computation
D460=14.576	Percentage of the state basic program to be provided by a district of average ability
D610=47.5	Uniform local tax rate to be applied on all nonutility property
D611=97.5	Uniform local tax rate to be applied on all utility property
D630=100	Percentage of variable local effort based on property

This pattern produced a state education program that would cost over 373.9 million dollars. Due to the fact that all units were again unweighted, as was the case in pattern I, each unit received a guarantee of 1000 dollars each for support. This pattern also resulted in a zero deviation from full equalization score for all districts. The total cost of the basic state program is presented in Table 8, along with the appropriate figures reflecting patterns I and III.

Pattern III. This pattern was used to demonstrate the distributional effects of an unweighted guaranteed yield program using data relative to the state of West Virginia. The pattern consisted of the following decisions:

D105=1	Full time equivalency enrollment
D110=1	Unweighted pupil counts
D116=1	Special education counts by malady
D470=1000	State guaranteed yield per student
D610=47.5	Uniform local tax rate to be applied on all nonutility property
D611=97.5	Uniform local tax rate to be applied on all utility property
D612=1.96	Local mills required to be levied on Class I property
D613=3.92	Local mills required to be levied on Class II property
D614=7.84	Local mills required to be levied on Classes III and IV property

This pattern again produced a state education program that would cost over 373.9 million dollars. Since all units were again unweighted, each district was guaranteed a 1000 dollar yield per FTE student, and again each district had a zero deviation from full equalization score. The total cost of the basic state program is presented in Table 8, along with the appropriate figures reflecting patterns I and II.

Patterns I, II, and III analysis. It is evident in Table 8 that the total cost of the state's educational program would be identical under each financing pattern. By each resulting in the same ultimate cost, the convergence of each pattern, relative to their purest form, was demonstrated. The fact that the amounts for these plans were identical is illustrative of another concept mentioned by Johns (1968) and Cohn (1974), in that when a mandatory tax rate is applied under

a guaranteed yield plan, the guaranteed yield plan is then equivalent to a foundation level in a foundation plan.

Cohn (1974) illustrated these two formulas as

#### Foundation Plan

$$EA_i = ENR (F - rV_i), \text{ where}$$

$EA_i$  = equalized state aid to a district,  
 $ENR$  = the method of pupil accounting utilized,  
 $r$  = mandated tax rate,  
 $F$  = foundation level support,  
 $V_i$  = assessed valuation per pupil in the district. (p. 33)

#### Guaranteed Yield Plan

$$EA_i = ENR (rV_g - rV_i), \text{ where}$$

$EA_i$  = equalized state aid to a district,  
 $ENR$  = the method of pupil accounting utilized,  
 $r$  = mandated tax rate,  
 $V_g$  = assessed valuation per pupil that the state guarantees,  
 $V_i$  = assessed valuation per pupil in the district. (p. 34)

Cohn (1971) continued his discussion of the basic formulas by stating that if a mandated rate is required under a guaranteed yield program, then  $F = rV_g$ , and thus an equivalent formula exists.

The percentage equalizing although it converges with the other formulas relative to overall program cost and state-aid distributions, it does this through a percentage sharing of the cost of the state and local portion, on a variable local rate. Cohn (1974) illustrated this formula as

$EA_i = ENR (1 - x V_i/V_s) EXP_i$ , where

$EA_i$  = equalized state aid to a district,  
 $ENR$  = the method of pupil account-utilized,  
 $x$  = a scalar between 0 and 1 which is used  
 to indicate the state's willingness to share  
 in the educational expenditures of the  
 district (higher value represents smaller  
 state share),  
 $V_i$  = assessed valuation per pupil in the dis-  
 trict,  
 $V_s$  = assessed valuation per pupil in the state's  
 average district,  
 $EXP_i$  = local per pupil expenditure in the dis-  
 trict. (p. 35)

Since all the formulas do converge and since all unweighted pupils in the three patterns illustrated had the same guaranteed value, some would argue that equality of educational opportunity was apparent under each plan. However, referring back to the original criteria established by the NEFP (1971) causes some doubts as to whether "the varying educational needs of the student population are being taken into consideration" (p. 238). If "a child is a child" for funding purposes, then the above definitional criterion is being unfulfilled.

### Distributional Equity

Equality of educational opportunity in recent years has evolved to be considered more of an equity issue rather than equality issue. The former says that students should be able to obtain the quality and kind of education to meet their individual and social needs while the latter says

they should obtain equal education. In providing for needs based upon equality there must be objective measures to evaluate the cost variations of programs. Mort's (1924) concept of the weighted pupil unit appears to be the most widely accepted and used tool in school finance plans.

Pattern IV. This pattern was used to demonstrate the distributional effects of a weighted pupil foundation program. Essentially the plan is identical to pattern I with the exception being the program's cost indices. The pattern consisted of the following decisions:

D105=1	Full time equivalency enrollment
D116=1	Special education count by malady
D123=1.00	Weighting of basic elementary students
D126=1.68	Weighting of EMR students
D127=2.10	Weighting of TMR students
D128=1.52	Weighting of learning disabled students
D129=1.60	Weighting of behavior disordered students
D130=1.51	Weighting of physically handicapped students
D131=2.00	Weighting of multiply handicapped students
D132=2.97	Weighting of visually handicapped students
D133=1.65	Weighting of auditory handicapped students
D134=1.62	Weighting of speech disordered students
D135=2.50	Weighting of homebound students
D136=1.14	Weighting of gifted students
D186=2.13	Weighting of agricultural students
D187=1.50	Weighting of distributive education students
D188=1.60	Weighting of health occupation students
D189=1.44	Weighting of home economics students
D190=1.39	Weighting of business and office occupations students
D191=2.20	Weighting of technical students
D192=2.20	Weighting of industrial students
D193=2.50	Weighting of other (code 99) students
D401=373906900	The cost of the basic program is to be based on this amount of funds available
D610=47.5	Uniform local tax rate to be applied on all nonutility property
D611=97.5	Uniform local tax rate to be applied on all utility property



D612=1.96	Local mills required to be levied on Class I property
D613=3.92	Local mills required to be levied on Class II property
D615=7.84	Local mills required to be levied on Classes III and IV property

The cost of the basic program was specified in decision 401, and since the program was based on pattern I, with the exception of the weights applied to pupils, the deviation from full equalization score was also zero.

Table 9 presents the total program dollars generated by this program.

Analysis of Pattern IV. It is evident by comparing Tables 8 and 9 that the cost of the total state program is the same under patterns I, II, III, and IV. Also, there is no difference in state dollars distributed to school districts in plans I, II, and III. Although pattern IV also utilizes the state-local relationship of pattern I, the difference in amount of state aid per pupil received by the school districts illustrates a redistribution of funds based on need.

The redistribution of funds accomplishes what Hale (1975) referred to as distributional equity, where all districts in a state "must have equal access to state and local revenues based upon a uniform definition of need" (p. 22). Hale (1975) continued when he stated some generally agreed upon concepts of an equalization model as being

TABLE 9  
Weighted Foundation Program  
Cost Figures

County	State dollars total
Barbour	\$3,204,701
Berkeley	8,470,804
Boone	6,050,744
Braxton	2,929,559
Brooke	5,890,293
Cabell	18,440,577
Calhoun	1,591,057
Clay	2,548,826
Doddridge	1,497,922
Fayette	11,705,175
Gilmer	1,524,989
Grant	1,918,308
Greenbrier	7,502,151
Hampshire	2,782,813
Hancock	7,974,097
Hardy	2,236,634
Harrison	14,000,841
Jackson	5,378,187
Jefferson	5,295,526
Kanawha	42,937,199
Lewis	3,443,737
Lincoln	5,257,943
Logan	11,028,279
Marion	11,194,074
Marshall	7,750,803
Mason	5,707,966
Mercer	13,578,773
Mineral	5,781,914
Mingo	8,646,530
Monongalia	10,211,367

TABLE 9 (continued)

County	State dollars total
Monroe	2,304,698
Morgan	1,972,788
McDowell	12,278,472
Nicholas	5,894,639
Ohio	8,694,698
Pendleton	1,453,786
Pleasants	1,611,240
Pocahontas	2,017,299
Preston	6,415,259
Putnam	7,344,770
Raleigh	16,052,171
Randolph	5,628,250
Ritchie	2,120,733
Roane	3,039,420
Summers	2,803,487
Taylor	3,264,656
Tucker	1,878,468
Tyler	2,324,504
Upshur	4,209,629
Wayne	9,754,580
Webster	2,791,425
Wetzel	4,761,836
Wirt	1,280,197
Wood	18,971,183
Wyoming	8,557,091
TOTAL	373,906,900

- (1) The plan must be based on a unit (pupil, teacher, or other) of need,
- (2) The plan should address all areas of costs incurred by the district, and
- (3) The plan should allocate state funds inversely to a measure of district wealth.  
(p. 23)

Cost indices (weights) accomplish criteria of tasks one and two, and a foundation program accomplishes criterion three. Under pattern I criterion number two was not met since the known differences in program costs were not recognized; pattern IV addresses both vertical equalization of resources and horizontal equalization of program needs which, combined, represent equalization of educational opportunity.

#### Taxpayer Equity

Taxpayer equity is a concept related to the revenue dimension of school finance. This concept tests whether the "equity concept of equal-treatment-of-equals who have the ability to pay" (Hale, 1975, p. 22) occurs in a state financial plan. Due (1970), among others (Hale, 1975; NEFP, 1971), has addressed this issue on several occasions. The two patterns discussed below analyze taxpayer equity through the use of the NEFP tax progressivity measure adapted from the Tax Foundation, Inc. (NEFP, 1971, pp. 251-263).

The computational formula for this measure is

$$T = \frac{(X_5 \times 35) + (X_6 \times 15) + (X_7 \times 14) + (X_8 \times 50) + (X_9 \times 14)}{R_5}$$

T = Progressivity value of all state taxes compared with the federal income tax

$X_5$  = State individual and corporate income taxes

$X_6$  = State sales and gross receipts taxes

$X_7$  = State property tax

$X_8$  = State estate and gift tax.

$X_9$  = Other state taxes

$R_5$  = Total state revenues.

The multiplier for each tax base was determined by the Tax Foundation and appears in Table 10.

Pattern V. Under this plan the 1976-1977 general revenue fund of the state of West Virginia was analyzed relative to the tax progressivity measure. The values for each tax base were

$X_5$  = \$156,936,211

$X_6$  = \$435,506,759

$X_7$  = included in  $X_9$

$X_8$  = \$ 7,840,904

$X_9$  = \$ 88,170,838

$R_5$  = \$688,454,712

TABLE 10  
Progressivity Value  
(T value)

Tax	Progressivity Value (T Value)
<b>TOTAL FEDERAL TAXES:</b>	
1. Individual income	50
2. Corporate income	24
3. Estate and gift	50
4. Sales, excise, and other	16
Total Weighted Average	39.90
<b>TOTAL STATE TAXES:</b>	
1. Individual and corporate income	35
2. Sales and gross receipts	15
3. Property	14
4. Estate and gift	50
5. All other	14
Total Weighted Average	20.49
<b>LOCAL SCHOOL TAXES:</b>	
1. Property	14
2. All other	14
Total Weighted Average	14.00

Note: From "Criteria for Evaluating State Financing Plans for the Public Schools," Alternative Programs for Financing Education, 1971, p. 262.

The progressivity level determined was 19.83. This level, as indicated on Table 10, is slightly above the progressivity measure for sales and gross receipts taxes. Since this category makes up over 60 percent of the general revenue fund, the finding was predictable. The overall level of progressivity is below the weighted average amount for the United States for 1968-1969, and below the 25 optimum level suggested by the NEFP (1971, p. 262).

Pattern VI. Under this alternative plan, a variation in the amounts received from the income tax (corporate and personal), sales and gross receipts taxes, and inheritance tax were adjusted to reflect more or less burden on the various tax bases. The following were the values for each tax base and the percent of the general fund they would produce:

$$X_5 = \$197,195,684 \quad (28.64\%)$$

$$X_6 = \$389,319,096 \quad (56.55\%)$$

$$X_7 = \text{included in } X_9$$

$$X_8 = \$13,769.094 \quad (2.00\%)$$

$$X_9 = \$88,170,838 \quad (12.81\%)$$

$$R_5 = \$688,454,712$$

The progressivity level determined for this hypothetical alternative was 21.3006. Although this level remains short of the optimum level (25), it is above the weighted average level for 1968-1969 and reflects a more progressive

pattern than the current distribution of burden (pattern V).

Analysis of patterns V and VI. Although not a conclusive measure of progressivity, the statistic does provide a good indicator of a state's relative tax burden. Through alterations in the revenue source, a state can more adequately provide for a relatively progressive tax structure, and thereby address the issue of taxpayer equity.

Pattern V was used to evaluate the 1975-1976 revenue structure of the general fund. The general revenue fund contributes approximately 325 million dollars to public education in the state of West Virginia. As was evident, the tax progressivity measure was relatively low for the state's 1975-1976 structure.

Pattern VI reflected a 1 percent increase in the corporate income tax, which raised the rate from 6 percent to 7 percent. The income tax was increased to contribute 25 percent to the fund. Additionally, the inheritance tax was increased from 1.1 percent to 2 percent, and the sales and gross receipt fund was reduced to enable the total fund to equal the same amount. Although the sales tax rate is only 3 percent in West Virginia, it was not increased for purposes of analysis.



### Summary

This chapter offered examples of the capabilities of the West Virginia School Finance Simulation Model. The 1976-1977 school year financial data base was utilized for all analyses. The first part of the chapter presented an analysis of the current public school finance plan relative to the concepts of equality of educational opportunity, distributional equity, and taxpayer equity. The second part of the chapter provided an analysis of the simulated alternatives.

The second part of the chapter was subdivided into three parts: equality of educational opportunity, distributional equity, and taxpayer equity. Within the first subdivision unweighted pupil data were used in a foundation program, percentage equalizing program, and guaranteed yield program. The results indicated that all formulae converge, and by unweighting pupil counts, all children received an equal guarantee by the state. Although equal amounts per pupil may be considered as equality, most experts in school finance advocate a system that recognizes funding variations in relationship to pupil needs. Mort's (1924) concept of the weighted pupil was utilized in the second subdivision. Total program cost was controlled by using the total cost previously determined

under the unweighted foundation program. Not only did this pattern meet the criteria of equality of educational opportunity through meeting children's needs, it also addressed the concept of distributional equity by apportioning state aid inversely to local ability, based upon a uniform local tax effort. The third subdivision addressed the concept of taxpayer equity through the use of the NEFP (1971) Tax Progressivity Index. This analysis was accomplished through two alternatives. First, the 1975-1976 general fund revenue was analyzed relative to the tax bases, and evaluated according to the progressivity formula. Second, alternative applications to the various tax bases was generated which placed more emphasis on taxes on wealth (income tax). Both measures were found to be below optimum established by the NEFP.

## CHAPTER V

### SUMMARY, IMPLICATIONS, AND RECOMMENDATIONS

This chapter is subdivided into three parts. The first part will summarize the attainment of the objectives of the study. The second part will discuss some implications of the study relative to public school finance issues, and the third part will offer recommendations for further study.

#### Summary

##### Model Adaptation

The first two objectives of this study related to collection of data and adaptation of the NEFP computer simulation model for the state of West Virginia. The first objective involved the identification and collection of data which would enable production of program and fiscal decisions relative to alternative school finance funding patterns.

Since all financial plans utilize information relative to tax effort, tax yield, and property valuation per pupil, component parts of each were identified as appraised and assessed property values, tax rates and millages, and pupil data. Further analysis of the West Virginia funding pattern, as well as the ability of the simulation to generate alternative plans, indicated a need for collection of data relative to enrollments of students by level and program participation, teacher salary information, special services and facility information (transportation and capital outlay), revenue capabilities, and wealth. Once the data were initially identified, contacts were made to secure the desired information.

Data relative to enrollments, programs, services and facilities, and teachers were obtained from the state department of education. Data relative to revenue and wealth were obtained from the state tax collector's office, and information regarding population was obtained from the Chamber of Commerce.

The simulation handles data through two major files which are identified as an M FILE and a D FILE. The M FILE is further subdivided into "B" data and "C" data. The "B" or base data contain all data relative to district demographic and social information, program and enrollment information, special services and facilities information,

receipts and expenditure information, and wealth information. Additionally, several arrays were added to accommodate West Virginia data. The additional arrays concerned information relative to current revenues, property rates and millages, transportation, and federal funds.

The second objective in development of calculational and decisional subroutines to enable the generation of alternatives was accomplished through the "C" data of the M FILE, and through the D FILE. The "C" or calculated data stores the results of computations made relevant to desired input decisions in the users manual (Appendix D) and the base data. The results can be accessed by the command PRINT with the desired "C" array indicated in the command statement. This file was also altered to accommodate changes which were unique to the state of West Virginia. Additionally, a new section was included which enables comparisons of the current formula to the proposed alternative. Likewise, the D FILE or decisional file required extensive changes within all three parts of the input manual (programmatic, distributional, and revenue). To enable analysis of alternatives, a guaranteed yield plan was added to the decisional file, along with the ability of the simulation to produce a Gini Index and plot a Lorenz Curve.

The key elements of the simulation are three additional files called LSTATE, SSTATE, and STATE. LSTATE and SSTATE are the original calculation arrays for the NEFP model and are accessed through the commands LCALC and SCALC, respectively. The STATE file in the NEFP model was blank to enable researchers and planners to create their own calculations relative to need. The blank STATE file was created for use in the West Virginia model. Calculations were written and stored in this file to enable the interaction of the other West Virginia files. The file is accessed through the command CALC.

#### Analysis of Equality of Educational Opportunity and Taxpayer Equity

The third objective stated that an analysis of alternative school funding patterns would be generated and evaluated in regard to equality of educational opportunity and taxpayer equity criteria. This part of the study was divided into three sections: (1) analysis of the 1976-1977 school financial plan, (b) generation of alternative funding patterns relative to the concept of equality of educational opportunity, and (3) analysis of alternatives relative to the concept of taxpayer equity.

West Virginia finance plan (1976-1977). The 1976-1977 West Virginia public school financial plan raises some issues concerning equality of educational opportunity

and the meeting of student's needs. The plan in use considers all basic students as the same for purposes of funding, with the exception of kindergarten and special education students. Kindergarten students are accounted for on the basis of an FTE enrollment count, with special education students receiving a triple weighting. The basic program, in not recognizing variations in educational levels, or other special programs (vocational education) appears to express the philosophy that all children have the same needs for purposes of funding. Likewise, the special education additional funding is provided regardless of the time spent in the program or the severity of the exceptionality of the child. Although fiscally, the special education weighting addresses need, the relationship of a weighted program to student needs is not based upon program equity concepts.

In regard to the ability of school districts to support education, property rich districts have more money available per pupil than do property poor districts due to the provision of special levies above the equalized required levy. This fact becomes more significant when one considers that the current state aid formula is based on a professional educator count, which was found to be highly correlated with district property wealth. The results indicated that wealthy districts have more professional

educators per pupil than do poorer districts, and thus they receive more state aid. This increased state aid is in addition to the special levy raised locally. The fact that a district has the capabilities to double its levy for a five-year period has significant implications for the quality and equality of education throughout the state.

Alternative funding patterns. Alternative funding patterns were generated to demonstrate the effects of an unweighted foundation program, an unweighted percentage equalizing program, and an unweighted guaranteed yield program. The results illustrated the convergence of these formulas, with the same dollar amount per child being required from state and local sources. Since all pupils received the same amount, some would argue that equality of educational opportunity was being provided for within the formulas. However, this unidimensional consideration of equality fails to meet generally accepted criteria of school finance. Most experts in the field express that in addition to vertical equity, horizontal equity needs to be provided. When these two concepts are considered in tandem, equality of educational opportunity is being provided through dollar allocations and consideration of student needs. To illustrate the concept of student needs a weighted foundation program was simulated, which provided



for the same total distribution as the unweighted foundation program. The result of this alternative demonstrated the redistributational effect of state and local aid, while providing for pupil needs.

Taxpayer equity. In regard to taxpayer equity, the 1975-1976 general revenue fund was analyzed relative to tax progressivity/regressivity. The NEFP Tax Progressivity measure was used to evaluate the tendency of the general fund relative to taxpayer equity. The result indicated that a level below optimum progressivity for a tax structure existed in West Virginia for the year evaluated. This low score reflected the high percentage of dependence of the general revenue fund on tax sources which places a heavier burden on low-income groups. An alternative tax structure was simulated which placed more emphasis on progressive tax sources (income). That alternative produced a higher progressivity measure.

Conclusions. Two basic conclusions appeared relative to the concepts of equality of educational opportunity and taxpayer equity. If equality of educational opportunity in a state financial program implies merely providing equal amounts of money per funding unit, then only one dimension of equality is fulfilled. Equality of educational opportunity requires, in addition to vertical or resource equity, horizontal or program equity. In providing for horizontal

equity, the individual student needs are taken into consideration in the financial plan. Most experts in the area of public school finance advocate a system which utilizes pupil weights for allocation of funds relative to fulfillment of the concept of horizontal equity.

Relative to taxpayer equity, the 1975-1976 general fund is composed of various revenue sources. However, over 60 percent of the general fund is derived from sales and gross receipt taxes. Due (1970) and others have evaluated this and other tax sources relative to progressivity/regressivity. Additionally, the simulation provides for a tax progressivity index of a state's tax structure in relation to what is considered the most equitable tax, the individual personal income tax (federal). Alternative measures of wealth other than purchasing power need to be considered because of the burden this type of tax places on low income groups. Having summarized the results of the research project, implications will now be considered.

#### Implications

The implications of this research study will be generalized relative to the testing and modeling of a public school finance simulation for analysis of equality of educational opportunity and taxpayer equity.

### Equality of Educational Opportunity

Through the use of a school finance simulation model, a state can evaluate methods of distribution relative to the concepts of resource equity and program equity.

Since the literature (Johns, 1968; NEFP, 1971, Cohn, 1974) as well as the simulation demonstrated the convergence of all state funding formulas, then specific names of financial plans become unimportant. What is important are the three aspects of any formulas--tax effort, tax yield, and property valuations per pupil. However, the definitions of terms relative to state financial plans do cause variations in plans. One example of the definitional considerations involves enrollment. Should students be accounted for on the basis of average daily attendance, average daily membership, or full time equivalency basis? Others might include time involvement, minimums, maximum, and so forth. These considerations are necessary when one considers resource or vertical equity.

However, concern for resource equity fails to provide any true meaning to definitions usually attributable to equality of educational opportunity. Overfunding or underfunding of programs could occur since the major consideration of this concept concerns equity of resources or fiscal neutrality of a state plan. Students' needs must be taken

into consideration in conjunction with resource allocation. Program or horizontal equity is concerned with enabling districts to financially operationalize programs for students based on needs. Additionally, cost analysis of programs would enable determination of cost differentials relative to a basic program. Having thus established the basic program, all others then become a function of the predetermined basic program. Again, the basic program as well as other programs becomes a definitional problem relative to variations in programs.

. Children's needs must direct legislative decisions to consider not only resource equity but program equity. If legislatures in their zeal and concern to provide funding based on dollars fail to consider program equity, then children's needs are relegated as a function of some other unit. In the case of West Virginia, the legislature allocates funds based on professional salaries. Professional salaries are highly correlated with property wealth. In reality then, funds made available to a district become a function of wealth rather than needs.

### Taxpayer Equity

Many state plans have either been challenged or are being challenged based on equality of educational opportunity bases or taxpayer equity issues. The Serrano

decision (1971) stated that property wealth should not be the determinant of the educational level of a child. Experts in the area of school finance have criticized the equity of the property tax relative to unequal treatment of equals, excessive burden on homeowners regardless of total wealth or income, and the regressive distribution of burden. But, as Due (1970) stated,

The dominance of the property tax in local finance is a product primarily of the limited potential of other local tax revenues. (p. 295)

However, as the NEFP (1971) and others have observed, an equitable plan of school finance should shift the burden of support from local to state sources of revenue.

Most state revenue sources, including West Virginia, place emphasis on the sales and gross receipt tax, which in turn places a heavier burden on low-income groups. Legislatures and citizens need to analyze and evaluate the relative progressivity of their state's revenue generating system. Measures which attach a tax to purchases should be deemphasized with more emphasis on indicators of fiscal ability (i.e., income). The computer simulation enables analysis of relative progressivity of a tax structure through use of the tax progressivity measure developed by the Tax Foundation.

Nationally, states need to consider analysis of their current financing structure for education. This

analysis requires consideration of the concepts of equality of educational opportunity and taxpayer equity. Although this study was place specific, West Virginia was used as an example of the potential and capabilities of a computer-based school finance simulation model. In an age when people "need to know," and the need to know is often time specific, computer technology and the ability to simulate consequences of alternative decisions are powerful planning, management, and research capability.

### Recommendations

The review of the related literature, findings, and conclusions of this study suggest

1. Since a simulation model was adapted for use in West Virginia, to facilitate planning, research, and management, then it should be utilized to evaluate and analyze funding patterns (current and alternative).
2. Since data factors change from year to year, data files need to be updated on a regular basis.
3. The capabilities of the simulation should be expanded (i.e., linking of other data bases for multi-year comparisons).

4. Cost studies need to be initiated to ascertain the costs of programs, transportation, capital outlay, et cetera.
5. A more thorough and efficient system of pupil accounting procedures needs to be developed to enable further analysis relative to levels and program involvement.
6. A more thorough and efficient cost accounting system needs to be established relative to pupil accounting procedures.

## APPENDICES



APPENDIX A  
DATA BASE CREATION PROGRAM

The following represents the subroutine CREATE, which established the West Virginia Model. Reference lines are included to explain each step.

<u>Card</u>	<u>Line</u>
//WVA JOB CARD	1
/*PASSWORD	2
// EXEC PGM=IEFBR14	3
//A DD DSN=B0050009.WVA.DFILE1,DISP=(OLD,DELETE)	4
//B DD DSN=B0050009.WVA.MFILE1,DISP=(OLD,DELETE)	5
// EXEC PGM=CREATE	6
//STEPLIB DD DSN=B0050009.WVA.LOADLIB,DISP=SHR	7
//SYSPRINT DD SYSOUT=A	8
//DFILE DD DSN=B0050009.WVA.DFILE1,DISP=(NEW,CATLG),	9
// DCB=(RECFM=F,LRECL=40,BLKSIZE=40,DSORG=CA,	10
// SPACE=(TRK,4),UNIT=SYSDA	11
//MFILE DD DSN=B0050009.WVA.MFILE1,DISP=(NEW,CATLG),	12
// DCB=(RECFM=F,LRECL=472,BLKSIZE=472,DSORG=DA),	13
// SPACE=(TRK,150),UNIT=SYSDA	14
//SYSIN DD *	15
'Y' 4 'Y' 150 55 55	16
//MCARD DD *	17
//DCARD DD *	18
//	19
/*	20

<u>Line</u>	<u>Explanation</u>
1-2	Security language for billing and start of job sequence.
3-5	IBM language to erase record files intended for use. This also makes sure nothing else is there.
6-8	Program language to initiate the CREATE routine.
9-11	Creation of the DFILE itself.
12-14	Creation of the MFILE itself.
15	Computer language to begin.
16	Specifying track size, number of districts, et cetera.

## APPENDIX A - continued

- 17        After this card all "B" and "C" data that are to be included in the simulation are fed in.
- 18        After this card, all "D" data that are to be included in the simulation are fed in.
- 19-20    The closing of all files and signing off of the computer.

The model can be run as either an interactive or remote job. "The basic programming language used was PL/1 and the computer system an IBM 360/Mod 65" (Boardman, Jordan, & Alexander, 1971, p. 1). A PL/1 compiler and a 2314 disc, 155 K memory and O.S. MVT are the basic machine requirements. "The program is written in module form so selected command option subroutines can be dropped to reduce the memory requirement to 132K or less if so desired" (Boardman et al., 1971, p. 1).

APPENDIX B  
BASIC DATA DEFINITIONS

<u>ARRAY</u>	<u>CATEGORY</u>	<u>DEFINITION</u>
001-028	"CURRENT ALLOCATIONS"	Represents current allocations by the state.
001	"Allocation for Professional Educators"	Amount of money required to pay state minimum salaries for professional educators.
002	"Allowance for Other Personnel - Part A"	An amount equal to 6% of the allowance for professional educators to be distributed based on the number of full time bus drivers.
003	"Allowance for Other Personnel - Part B"	An amount equal to 14% of the allowance for professional educators to be distributed to the counties in proportion to adjusted enrollment.
004	"Allowance for Fixed Charges"	An amount determined by adding the present Social Security rate to 2%, then multiplying this by the allowances for professional salaries, other personnel (parts a and b).
005	"Allowance for Transportation"	An amount determined by adding 80% of non-salary expenses, total cost of insurance of transportation items, 10% of current replacement value of the bus fleet, 80% of contracted transportation services, and aid provided in lieu of transportation.
006	"Allowance for Administrative Costs"	An amount equal to 1% of the allowance for professional educators, to be distributed to the counties on an equal basis.

## APPENDIX B - Continued

<u>ARRAY</u>	<u>CATEGORY</u>	<u>DEFINITION</u>
007	"Allowance for Other Current Expenses"	An amount equal to 10% of the sum of the allowances for professional educators and other personnel (parts a and b), which is distributed to the counties based in proportion to adjusted enrollment.
008	"Allowance for National Average Attainment"	Amounts that accrue from allocations due to increased total share, balances in general school fund, or from appropriations, which are distributed to the counties based in proportion to adjusted enrollment.
009	"General School Fund Distribution"	Distribution of the General School Fund Balance, which is distributed in proportion to the adjusted enrollment, and is in addition to the allowance toward national average attainment.
010	"Local Share"	Amount required by local counties to participate in the state basic program.
011	"Incentive for Program Improvement"	Allocation of funds to enable counties to employ additional staff to bring them up to state average.
012	"Supplemental Early Childhood Aides"	An amount allocated outside the basic foundation formula for the employment of early childhood aides.

## APPENDIX B - Continued

<u>ARRAY</u>	<u>CATEGORY</u>	<u>DEFINITION</u>
013	"Supplemental Teachers' Salaries"	An amount allocated outside the basic foundation formula for supplemental teacher's salary raises.
014	"Supplemental Service and Auxiliary Services"	An amount allocated outside the basic foundation formula for supplemental service and auxiliary salary raises.
015	"Supplemental Aid for Children's Homes"	An allocation for districts in which children's homes are located.
016	"State Aid for Increased Enrollment"	An amount allocated to counties which experience an increase in net enrollment.
017	"Special Education Allocation Out of Formula Grants"	An allocation for out of formula distribution of special education grants to cover salaries and supportive costs.
018	"Special Education Allocation Out of Formula - Homebound Instruction"	Allocation of special education aid to counties out of the basic formula for special education homebound instruction.
019	"Special Education Allocation Out of Formula - Additional Grants"	Additional allocation of special education aid to counties for workshops and hospital instruction program.
020	"Special Education Allocation Out of Formula - RESA"	An allocation of special education aid to RESA centers.
021	"State Aid to RESA"	An allocation of state aid to RESA Centers based on a basic allocation plus an additional per pupil in adjusted enrollment allocation.

## APPENDIX B - Continued

<u>ARRAY</u>	<u>CATEGORY</u>	<u>DEFINITION</u>
022	"Teacher Education Centers"	An amount allocated to districts with teacher education centers.
023	"Vocational Day School 1976"	An amount allocated to the districts to provide vocational programs for the day school program.
024	"Vocational Adult Education, 1976"	An amount allocated to the districts to provide vocational programs for the adult education programs.
025	"Area Vocational Programs, 1976"	An amount allocated to aid area vocational programs.
026	"Vocational Act 1968 - State, 1976"	The amount of state aid to districts based on the Vocational Act of 1968 and any additions.
027	"West Virginia Social Security Work Incentive, 1976"	An amount allocated to provide aid for work incentive.
028	"Other State Revenue, 1976"	Allocation of state money from other state agencies to the school districts.
030-036	"PROPERTY APPRAISED"	
030	"Appraised Property Nonutility Class I"	Appraised value on all tangible personal property employed exclusively in agriculture while owned by the producer; all notes, bonds, accounts receivable, stocks and other evidences of indebtedness.
031	"Appraised Property Utility Class I"	The same as Appraised Property - Nonutility Class I (030), except only applies to utilities.



## APPENDIX B - Continued

<u>ARRAY</u>	<u>CATEGORY</u>	<u>DEFINITION</u>
032	"Appraised Property Nonutility Class II"	Appraised value on all property owned, used and occupied by the owner exclusively for residential purposes; all farm lands occupied and cultivated by their owners or bona fide tenants.
033	"Appraised Property Nonutility Class III"	Appraised value on all real and personal property situated outside of municipalities, exclusive of Classes I and II.
034	"Appraised Property Utility Class III"	The same as Appraised Property - Nonutility Class III (033), except only applies to utilities.
035	"Appraised Property Nonutility Class IV"	Appraised value on all real and personal property situated inside of municipalities, exclusive of Classes I and II.
036	"Appraised Property Utility Class IV"	The same as Appraised Property Nonutility Class IV (035), except only applies to utilities.
100	"DISTRICT"	Number of the school district.
102	"DISTRICT IDENTIFICATION"	Code number of the district - State Department of Education.
104-109	"DEMOGRAPHIC AND SOCIAL"	Vital statistics of the school districts.
104	"Square Miles"	Total number of square miles in the district.
107	"Population, Total Population 1975"	The 1975 Department of Commerce population estimated for the state.

## APPENDIX B - Continued

<u>ARRAY</u>	<u>CATEGORY</u>	<u>DEFINITION</u>
108	"Rate of Growth (%) (1970-1975), Enrollment"	Rate of change in school enrollment in the school district during the 5 year period from 1970-1975 expressed as a percentage.
109	"Rate of Growth (%) (1970-1975), Population"	Rate of change of the population of the school district during the 5 year period of 1970-1975 expressed as a percentage.
110-346	"PROGRAMS AND ENROLLMENT"	The number of students participating in each phase of the school district's educational program.
110-112	"Current"	Enrollment figures based on third month adjusted enrollment for the current program.
110	"Kindergarten"	Full time equivalency of basic kindergarten students enrolled.
111	"1 - 12"	Number of students in grades 1-12 (excluding special education).
112	"Special Education"	Number of Certified Special Education Students enrolled.
115-132	"Basic"	Enrollment figures of students in other than special programs.
115	"4 Yr. Old ENR"	Number of basic 4 year old students enrolled.
117	"4 Yr. Old FTE"	Full time equivalency of basic 4 year old students enrolled.
120	"Kindergarten ENR"	Number of basic kindergarten students enrolled.

## APPENDIX B - Continued

<u>ARRAY</u>	<u>CATEGORY</u>	<u>DEFINITION</u>
122	"Kindergarten FTE"	Full time equivalency of basic kindergarten students enrolled.
125	"Elementary ENR"	Number of basic elementary students enrolled.
127	"Elementary FTE"	Full time equivalency of basic elementary students enrolled.
130	"Secondary ENR"	Number of basic secondary students enrolled.
132	"Secondary FTE"	Full time equivalency of basic secondary students enrolled.
140-192	"Special/Exceptional"	Enrollment figures of students in special/exceptional education programs by exceptionality within the school districts.
140	"EMR - ENR"	Number of educable mentally retarded students enrolled.
142	"EMR - FTE"	Full time equivalency of educable mentally retarded students enrolled.
145	"TMR - ENR"	Number of trainable mentally retarded students enrolled.
147	"TMR - FTE"	Full time equivalency of trainable mentally retarded students enrolled.
150	"Learn. Dis. - ENR"	Number of learning disability students enrolled.
152	"Learn. Dis. - FTE"	Full time equivalency of learning disability students enrolled.

## APPENDIX B - Continued

<u>ARRAY</u>	<u>CATEGORY</u>	<u>DEFINITION</u>
155	"Behav. Dis. - ENR"	Number of behavioral disordered students enrolled.
157	"Behav. Dis. - FTE"	Full time equivalency of behavioral disordered students enrolled.
160	"Phys. HDCP - ENR"	Number of physically handicapped students enrolled.
162	"Phys. HDCP - FTE"	Full time equivalency of physically handicapped students enrolled.
165	"Mult. HDCP - ENR"	Number of multiple handicapped students enrolled.
167	"Mult. HDCP - FTE"	Full time equivalency of multiple handicapped students enrolled.
170	"Vis. HDCP - ENR"	Number of visually handicapped students enrolled.
172	"Vis. HDCP - FTE"	Full time equivalency of visually handicapped students enrolled.
175	"Aud. HDCP - ENR"	Number of auditorily handicapped students enrolled.
177	"Aud. HDCP - FTE"	Full time equivalency of auditorily handicapped students enrolled.
180	"Comm. Dis. - ENR"	Number of communication disordered students enrolled.
182	"Comm. Dis. - FTE"	Full time equivalency of communication disordered students enrolled.
185	"Homebound - ENR"	Number of homebound students enrolled.

## APPENDIX B - Continued

<u>ARRAY</u>	<u>CATEGORY</u>	<u>DEFINITION</u>
187	"Homebound - FTE"	Full time equivalency of homebound students enrolled.
190	"Gifted - ENR"	Number of gifted students enrolled.
192	"Gifted - FTE"	Full time equivalency of gifted students enrolled.
195-232	"Vocational/Technical"	Enrollment figures of students in vocational/technical programs by program area within the school district.
195	"Agr. - ENR"	Number of agricultural students enrolled.
197	"Agr. - FTE"	Full time equivalency of agricultural students enrolled.
200	"Dist. Ed. - ENR"	Number of distributed education students enrolled.
202	"Dist. Ed. - FTE"	Full time equivalency of distributive education students enrolled.
205	"Health Occ. - ENR"	Number of health occupation students enrolled.
207	"Health Occ. - FTE"	Full time equivalency of health occupation students enrolled.
210	"Home Ec. - ENR"	Number of home economic students enrolled.
212	"Home Ec. - FTE"	Full time equivalency of home economic students enrolled.
215	"Bus./Of. Occ. - ENR"	Number of business and office occupation students enrolled.

## APPENDIX B - Continued

<u>ARRAY</u>	<u>CATEGORY</u>	<u>DEFINITION</u>
217	"Bus./Of. Occ. - FTE"	Full time equivalency of business and office occupation students enrolled.
220	"Tech. - ENR"	Number of technical students enrolled.
222	"Tech. - FTE"	Full time equivalency of technical students enrolled.
225	"Indust. - ENR"	Number of industrial students enrolled.
227	"Indust. - FTE"	Full time equivalency of industrial students enrolled.
230	"Ot V/T 99 - ENR"	Number of students enrolled in other vocational technical programs classed as 99.
232	"Ot V/T 99 - FTE"	Full time equivalency of students enrolled in other vocational technical programs classed as 99.
235-252	"Special Education Delivery Systems"	Enrollment figures of students in special education by type of delivery system.
235	"Sp. Ed. Self Contained - ENR"	Number of special education students in an all day program for their respective exceptionality.
237	"Sp. Ed. Self Contained - FTE"	Full time equivalency of special education students in an all day program for their respective exceptionality.
240	"Sp. Ed. Resource - ENR"	Number of special education students in a half time program for their respective exceptionality.

## APPENDIX B - Continued

<u>ARRAY</u>	<u>CATEGORY</u>	<u>DEFINITION</u>
242	"Sp. Ed. Resource - FTE"	Full time equivalency of special education students in a half time program for their respective exceptionality.
245	"Sp. Ed. Itinerant - ENR"	Number of special education students in a fifth time program for their respective exceptionality.
247	"Sp. Ed. Itinerant - FTE"	Full time equivalency of special education students in a fifth time program for their respective exceptionality.
250	"Sp. Ed. DS 4 - ENR"	Option.
252	"Sp. Ed. DS 4 - FTE"	Option.
340-346	"Compensatory"	Enrollment of pupils in compensatory programs.
340	"Low Inc. - ENR"	Number of compensatory low income students enrolled.
341	"Low Ach. - ENR"	Number of compensatory low achievement students enrolled.
345	"Low Inc. - FTE"	Full time equivalency of compensatory low income students enrolled.
346	"Low Ach. - FTE"	Full time equivalency of compensatory low achievement students enrolled.
360-364	"TRANSPORTATION" (Part I)	
360	"Average Daily Route Miles 1976"	Average daily route miles of buses traveling in the school district for the 1975-76 school year.

## APPENDIX B - Continued

<u>ARRAY</u>	<u>CATEGORY</u>	<u>DEFINITION</u>
361	"Number of Pupils Trans-ported 1976"	Number of pupils trans-ported in the school district for the school year 1975-76.
362	"Sparsity Cost Variation"	Linear density of counties to be used in a computation of trans-portionation funds to be distributed by the state.
363	"Approved Costs"	Amount of local district's transportation costs approved by the state for purposes of computing state allotment of funds.
364	"Actual Costs 1976"	The actual costs of trans-portionation in the districts for the 1975-76 school year.
065-068	"TRANSPORTATION" (Part II)	
065	"Average Daily Miles 1976"	Average daily miles of buses traveling in the school district for the 1975-76 school year.
066	"Bus Drivers' Salaries 1976"	Actual amount of money spent for bus drivers' salaries for the 1975-76 school year.
067	"Other Transportation Salaries 1976"	Actual amount of money spent for other trans-portionation salaries (excluding bus drivers) for the 1975-76 school year.
068	"Transportation Costs - Non Salary 1976"	Actual amount of money spent for transportation costs less salaries.



## APPENDIX B - Continued

<u>ARRAY</u>	<u>CATEGORY</u>	<u>DEFINITION</u>
365-368	"CAPITAL OUTLAY AND DEBT SERVICE"	
365	"Approved Project Costs 1977"	Amount of local district's proposed capital outlay project for which the state will provide funds.
366	"Actual Project Costs 1977"	Total cost of approved capital outlay projects in the school district.
367	"Depreciation Allowance"	Computed annual allowance for depreciation of facilities based on projected costs of providing instructional facilities for a pupil or instructional unit.
368	"Debt Service 1977"	Expenditures for debt retirement and interest on debt for capital outlay purposes.
370-373	"SCHOOL FOOD SERVICE"	
370	"Participating Pupils (Total)"	The total number of pupils participating in the school district's food service program.
371	"Federal Food Service Revenue"	Total amount of all federal funds received by the school district to support the food service program.
372	"Total Food Service Revenue"	Total amount of all federal, state and local funds received by the school district used to support the food service program.
373	"Total Food Service Expenditures"	Total amount of all expenditures by the school district for the food service program.

## APPENDIX B - Continued

<u>ARRAY</u>	<u>CATEGORY</u>	<u>DEFINITION</u>
380-404	"PROFESSIONAL EDUCATOR TRAINING AND EXPERIENCE"	
380	"E - 1, T - 1"	FTE count of professional educators with an experience level of 0 - 2 years and a training level of under a bachelor's degree.
381	"E - 1, T - 2"	FTE count of professional educators with an experience level of 0 - 2 years and a training level of a bachelor's degree.
382	"E - 1, T - 3"	FTE count of professional educators with an experience level of 0 - 2 years and a training level of a master's degree.
383	"E - 1, T - 4"	FTE count of professional educators with an experience level of 0 - 2 years and a training level of a master's degree + 30 hrs.
384	"E - 1, T - 5"	FTE count of professional educators with an experience level of 0 - 2 years and a training level of a doctorate.
385	"E - 2, T - 1"	FTE count of professional educators with an experience level of 3 - 6 years and a training level of under a bachelor's degree.
386	"E - 2, T - 2"	FTE count of professional educators with an experience level of 3 - 6 years and a training level of a bachelor's degree.

## APPENDIX B - Continued

<u>ARRAY</u>	<u>CATEGORY</u>	<u>DEFINITION</u>
387	"E - 2, T - 3"	FTE count of professional educators with an experience level of 3 - 6 years and a training level of a master's degree.
388	"E - 2, T - 4"	FTE count of professional educators with an experience level of 3 - 6 years and a training level of a master's degree + 30 hrs.
389	"E - 2, T - 5"	FTE count of professional educators with an experience level of 3 - 6 years and a training level of a doctorate.
390	"E - 3, T - 1"	FTE count of professional educators with an experience level of 7 - 11 years and a training level of under a bachelor's degree.
391	"E - 3, T - 2"	FTE count of professional educators with an experience level of 7 - 11 years and a training level of a bachelor's degree.
392	"E - 3, T - 3"	FTE count of professional educators with an experience level of 7 - 11 years and a training level of a master's degree.
393	"E - 3, T - 4"	FTE count of professional educators with an experience level of 7 - 11 years and a training level of a master's degree + 30 hrs.
394	"E - 3, T - 5"	FTE count of professional educators with an experience level of 7 - 11 years and a training level of a doctorate.

## APPENDIX B - Continued

<u>ARRAY</u>	<u>CATEGORY</u>	<u>DEFINITION</u>
395	"E - 4, T - 1"	FTE count of professional educators with an experience level of 12 - 17 years and a training level of under a bachelor's degree.
396	"E - 4, T - 2"	FTE count of professional educators with an experience level of 12 - 17 years and a training level of a bachelor's degree.
397	"E - 4, T - 3"	FTE count of professional educators with an experience level of 12 - 17 years and a training level of a master's degree.
398	"E - 4, T - 4"	FTE count of professional educators with an experience level of 12 - 17 years and a training level of a master's degree + 30 hrs.
399	"E - 4, T - 5"	FTE count of professional educators with an experience level of 12 - 17 years and a training level of a doctorate.
400	"E - 5, T - 1"	FTE count of professional educators with an experience level of 18 or more years and a training level of under a bachelor's degree.
401	"E - 5, T - 2"	FTE count of professional educators with an experience level of 18 or more years and a training level of a bachelor's degree.

## APPENDIX B - Continued

<u>ARRAY</u>	<u>CATEGORY</u>	<u>DEFINITION</u>
402	"E - 5, T - 3"	FTE count of professional educators with an experience level of 18 or more years and a training level of a master's degree.
403	"E - 5, T - 4"	FTE count of professional educators with an experience level of 18 or more years and a training level of a master's degree + 30 hrs.
404	"E - 5, T - 5"	FTE count of professional educators with an experience level of 18 or more years and a training level of a doctorate.
440-452	"SPARSITY MODIFYING FACTORS"	
440	"Elementary, ENR Under 100"	Pupils in elementary schools with enrollments of less than 100 students.
441	"Elementary, ENR 100-149"	Pupils in elementary schools with enrollment between 100-149 students.
442	"Elementary, ENR 150-200"	Pupils in elementary schools with enrollment between 150-200 students.
450	"Secondary, ENR Under 100"	Pupils in secondary schools with enrollments of less than 100 students.
451	"Secondary, ENR 100-149"	Pupils in secondary schools with enrollment between 100-149 students.
452	"Secondary, ENR 150-200"	Pupils in secondary schools with enrollment between 150-200 students.

## APPENDIX B - Continued

<u>ARRAY</u>	<u>CATEGORY</u>	<u>DEFINITION</u>
460-471	"ADDITIONAL MODIFYING FACTORS"	
460	"Cost of Living"	Total expenditures required to provide the necessities of life for a family in the school district.
470	"Achievement below 25 Percentile"	Number of pupils in the school district that score below the 25th percentile on achievement tests.
475-483	"RECEIPTS AND EXPENDITURES" (Part I)	
475	"Receipts, Fed. Title 1 1976"	Total amount of Title 1 funds received by the school district from the federal government.
476	"Receipts, Fed. Other 1976"	Total amount of funds, except Title I, federal forest reserve, impact aid, and Vocational Act of 1968 (B1, B4A, B4B, B6, and B7) received by the school district from the federal government.
478	"Receipts, Local REG & EXCESS"	Total amount of funds received from the local tax sources by the school district.
479	"Receipts, Other Local"	Total amount of funds from other local sources, except local tax receipts received by the school district.

## APPENDIX B - Continued

<u>ARRAY</u>	<u>CATEGORY</u>	<u>DEFINITION</u>
480	"Exp. K-12, NCE 1976"	Total of all current expenditures from public funds in the school district except for transportation, food service, capital outlay, and debt service less any discounts, rebates, reimbursements or revenue produced by the service or activity of the school district during a specified period of time for grades K-12.
481	"Expenditures K-12 Social Security 1976"	Total expenditures made by the school district for the employer's share of the social security insurance program for K-12 employees.
482	"Expenditures K-12 Teacher Retirement - 1976"	Total expenditures made by the school district for the employer's share of the K-12 teacher's retirement program.
483	"Expenditures K-12, Other - 1976"	Total expenditures made by the school district for the employer's share of pension payments and public employees.
077-080	"RECEIPTS AND EXPENDITURES" (Part II)	
077	"Federal Forest Reserve Funds - 1976"	Allocation to the counties of federal forest reserve funds.
078	"Federal Impact Aid (PL874) - 1976"	Allocation to the counties of federal impact aid.
079	"VI-B Federal Aid - 1977"	Allocation to the counties of federal VI-B EHA aid.

## APPENDIX B - Continued

<u>ARRAY</u>	<u>CATEGORY</u>	<u>DEFINITION</u>
080	"Voc. Sec. Grants - Fed. 1976"	Allocation of the Vocational Education Act to the counties for secondary instruction (including B1, B4A, B4B, B6, and B7).
485-497	"WEALTH MEASURES"	
488	"Personal Income, Adjusted Gross Income 1975"	Total personal income less adjustments and exemptions for taxpayers in the school district, a total taxable income for taxpayers in the school district (tax year 1975).
489	"Personal Income, Income Taxes Paid 1975"	Amount of personal income tax paid by persons in the school district for the tax year 1975.
490	"Personal Income, Returns Filed Under \$4000, 1975 Gross"	Number of persons in the school district who filed personal income tax returns which showed under \$4000 adjusted gross income.
491	"Personal Income, Returns Filed \$4000-\$10,000, 1975 Gross"	Number of persons in the school district who filed personal income tax returns which showed between \$4000 and \$10,000 adjusted gross income.
492	"Personal Income, Returns Filed Over \$10,000, 1975 Gross"	Number of persons in the school district who filed personal income tax returns which showed over \$10,000 adjusted gross income.
494	"Sales and Gross Receipts, 1976"	State tax revenue on sales and gross receipts collected in the school district.



## APPENDIX B - Continued

<u>ARRAY</u>	<u>CATEGORY</u>	<u>DEFINITION</u>
495	"Corporate Income Tax (State Total) - 1976"	State revenue from corporate income taxes.
496	"Inheritance Tax (State Total) - 1976"	State revenue from the inheritance tax.
497	"Other (State Total) - 1976"	State revenue from state taxes which includes business and occupational tax, cigarette tax, business franchise registration tax, charter tax, use tax, carrier income tax, beer tax, insurance tax, property tax, racing fees, liquor profits, tuition and fees, institutional and department collections, Boards and Commissions, miscellaneous income, interest, and medical payments.
498	"Total Gross Sales, 1976"	The total amount of gross sales in each district.
499	"Corporate Income (State Total) - 1976"	The total amount of corporate income for the state.

APPENDIX C  
CALCULATED DATA DEFINITIONS

C500

Total Pupils

Total pupils can be based on either NET enrollment or FTE (D103 or D105). It is also a function of whether 4 year olds and/or kindergarten is included in the program (D101 and D102). Dependent on the above decisions, each pupil to be included in the program is given a weight of 1 and summed to calculate total pupils (basic, educable mentally retarded, trainable mentally retarded, learning disabilities, behavioral disorders, physically handicapped, multiple handicapped, visually handicapped, auditorily handicapped, communication disorders, homebound, gifted, agriculture, distributive education, health occupations, home economics, business/office occupations, technical, industrial and other vocational). Each pupil is classified into one of the above categories and the categories are mutually exclusive.

C520

Total Professional Staff (FTE)

The sum of the professional educators from the professional educators educational training and experience matrix (B380-B404).

C540

Pupil/Professional Staff Ratio

Total pupils (C500) divided by total professional staff (C520).

C542

Assessed Value Property-Non-Utility

The assessed valuation of all Non-Utility property (B030+B032+B033+B035) by the proposed assessment rate (D610).

C543

Assessed Value Property-Utility

The assessed valuation of all Utility property (B031+B034+B036) by the proposed assessment rate (D611).

C544

Assessed Value Property-Total

The assessed valuation of all property by their proposed assessment rate (C542+C543).

C550

Early Childhood (Basic) (4 yr. + K) - Units

The sum of the multiplication of the number of basic 4 year olds and/or kindergarten pupils (B110-B122) by their respective cost differentials depending on the decisions made.

## APPENDIX C - Continued

## C560      Grades 1-12 - Basic - Units

The sum of the multiplication of the number of basic elementary and secondary pupils (B125-B132) by their respective cost differentials.

## C570      Special/Exceptional - Units

The sum of the multiplication of the number of educable mentally retarded, trainable mentally retarded, learning disabilities, behavioral disorders, physically handicapped, multiple handicapped, visually handicapped, auditorily handicapped, communication disorders, homebound, and gifted pupils (B140-B192) by their respective cost differentials.

## C580      Vocational/Technical - Units

The multiplication of the number of agriculture, distributive education, health occupations, home economics, business/office occupations, technical industrial, and other vocational pupils (B195-B232) by their cost differentials.

## C590      Compensatory (add-on) - Units

The multiplication of the number of compensatory pupils (B340-B346) by their cost differential.

## C600      Total All Categories - Units

The sum of the early childhood (basic) units (C550), grades 1-12 (basic) units (C560), special/exceptional (C570), vocational/technical units (C580), and compensatory units (C590).

## C610      Transportation Required Effort

The required local dollars needed to participate in a local-state partnership share transportation program. Computation based on decision D164.

## C615      Transportation State Allotment

The state's share of a local-state partnership share transportation program. Computation based on decisions D161-D165.

## C620      Capital Outlay and Debt Service Required Effort

The required local dollars needed to participate in a local-state partnership share capital outlay and debt service program. Computation based on decisions D174-D177.

## APPENDIX C - Continued

- C625      Capital Outlay and Debt Service State Allotment
- The state's share of a local-state partnership share capital outlay and debt service program. Computation based on decisions D170-D177.
- C635      School Food Service State Allotment
- The state's share of a local-state partnership share school food service program. Computation based on decisions D180-D184.
- C640      Administrative, Supervisory, and Auxiliary Program Adjustment (ASAS)
- Additional units for recognition of administrative, supervisory, and auxiliary service based on either a total units percentage (D200) or a ratio of program units per ASAS unit (D201).
- C650      Sparsity Program Adjustment
- Additional units for schools with less than 200 pupils using appropriate cost differential weighting (D205-D213).
- C660      Educational Training and Experience Program Adjustment
- A state program adjustment factor based on the use of an educational training and experience index for professional staff. The adjustment factor is computed by summing the multiplication of the indexes by the corresponding number of professional staff and dividing by the total professional staff (C520).
- C670      Cost of Living Program Adjustment
- A state program adjustment factor based on a ratio of cost of living index for the district to that of the state (D225).
- C700      Special Program Allotment
- A state dollar allotment computed by multiplying a flat dollar amount (D250-D258) per the number of pupils in a particular special program and summing over the special programs for which these allotments are provided.
- C710      Hardship Allotment
- A state dollar allotment (D265) per teacher serving in geographically remote areas.

## APPENDIX C - Continued

## C720 Innovation Allotment

A state dollar allotment (D270) allocated on a per pupil unit basis for approved cost of innovation programs.

## C730 Achievement Allotment

A state dollar allotment (D260-D261) per pupil below the 25th percentile and/or per pupil above the 75th percentile.

## C740 Basic State Program - State Dollars

A fiscal allotment for local educational agencies from state revenue sources excluding allotments for special services and facilities, modifying factors or incentive programs. There are five different basic distribution methods possible for computing the state dollars. These distribution methods are based on decisions D400-D600.

## C745 Basic State Program - State Dollars Per Pupil

The basic state program - state dollars (C740) divided by total pupils (C500).

## C748 Basic State Program - State Dollars Per Unit

The basic state program - state dollars (C740) divided by total program units (C600+C640+C650).

## C750 Special Services and Facilities - State Dollars

The sum of the state allotment for transportation (C615), capital outlay and debt service (C625), and school food service (C635).

## C755 Special Service and Facilities - State Dollars Per Pupil

The special services and facilities - state dollars (C750) divided by total pupils (C500).

## C758 Special Services and Facilities - State Dollars Per Unit

The special services and facilities - state dollars (C750) divided by total pupils (C600+C640+C650).

## C760 Special Allotments - State Dollars

The sum of the state allotment for special programs (C700), hardship (C710), innovation (C720), and achievement (C730).

## APPENDIX C - Continued

- C765      Special Allotments - State Dollars Per Pupil  
The special allotment - state dollars (C760) divided by total pupils (C500).
- C768      Special Allotments - State Dollars Per Unit  
The special allotment - state dollars (C760) divided by total program units (C600+C640+C650).
- C770      Local Incentive - State Dollars  
A fiscal allotment for local educational agencies from state revenue for levying local leeway taxes. There are three different basic incentive distribution methods possible for computing the state dollars. These incentive distribution methods are based on decisions D480, D485, and D490.
- C775      Local Incentive - State Dollars Per Pupil  
The local incentive - state dollars (C770) divided by total pupils (C500).
- C778      Local Incentive - State Dollars Per Unit  
The local incentive - state dollars (C770) divided by total program units (C600+C640+C650).
- C780      Total State Program - State Dollars  
The sum of the state dollars for the basic state program (C740), special services and facilities (C750), special allotments (C760), and local incentive (C770).
- C785      Total State Program - State Dollars Per Pupil  
The total state program - state dollars (C780) divided by the total pupils (C500).
- C788      Total State Program - State Dollars Per Unit  
The total state program - state dollars (C780) divided by total program units (C600+C640+C650).
- C790      Basic State Program - Local Dollars  
A fiscal allotment for local educational agencies from local revenue sources; this amount does not include local revenue required for special services and facilities nor that from levying local leeway taxes. The computation is the total basic program dollars (SC01\*SC02 as SC01) minus the basic state program - state dollars (C740).

## APPENDIX C - Continued

- C791 Local Property Yield - Class 1 Non-Utility  
The yield on Class 1 Non-Utility property (B030) based on decisions D610 and D612.
- C792 Local Property Yield - Class 1 Utility  
The yield on Class 1 Utility property (B031) based on decisions D611 and D612.
- C793 Local Property Yield - Class 2 Non-Utility  
The yield on Class 2 Non-Utility property (B032) based on decisions D610 and D613.
- C794 Local Property Yield - Classes 3 & 4 Non-Utility  
The yield on Classes 3 and 4 Non-Utility property (B033 and B035) based on decisions D610 and D614.
- C795 Basic State Program - Local Dollars Per Pupil  
The basic state program - local dollars (C790) divided by total pupils (C500).
- C796 Local Property Yield - Classes 3 & 4 Utility  
The yield on Classes 3 and 4 Utility property (B034 and B036) based on decisions D611 and D614.
- C798 Basic State Program - Local Dollars Per Unit  
The basic state program - local dollars (C790) divided by total program units (C600+C640+C650).
- C800 Special Services and Facilities - Local Dollars  
The sum of the local dollars for transportation (C610) capital outlay and debt service (C620), and school food service (C630).
- C805 Special Services and Facilities - Local Dollars Per Pupil  
The special services and facilities - local dollars (C800) divided by the total pupils (C500).



## APPENDIX C - Continued

- C808 Special Services and Facilities - Local Dollars Per Unit  
The special services and facilities - local dollars (C800) divided by total program units (C600+C640+C650).
- C810 Local Leeway - Dollars  
A fiscal allotment for local educational agencies from levying local leeway taxes. The options for the distribution methods involving the leeway taxes are computed in SC05 and C860 (AGI).
- C815 Local Leeway - Dollars Per Pupil  
The local leeway dollars (C810) divided by total pupils (C500).
- C818 Local Leeway - Dollars Per Unit  
The local leeway dollars (C810) divided by total program units (C600+C640+C650).
- C820 Total Local Program - Local Dollars  
The sum of the local dollars for the basic state program (C790), special services and facilities (C800), and local leeway (C820).
- C825 Total Local Program - Local Dollars Per Pupil  
The total local program - local dollars (C820) divided by total pupils (C500).
- C828 Total Local Program - Local Dollars Per Unit  
The total local program - local dollars (C820) divided by total program units (C600+C640+C650).
- C830 Basic State Program - Total Dollars  
A fiscal allotment for local educational agencies from state and local revenue sources excluding allotments for special services and facilities, modifying factors or incentive programs (C740+C790).
- C835 Basic State Program - Total Dollars Per Pupil  
The basic state program - total dollars (C830) divided by total pupils (C500).

## APPENDIX C - Continued

- C838      Basic State Program - Total Dollars Per Unit  
The basic state program - total dollars (C830) divided by total program units (C600+C640+C650).
- C840      Total State/Local Program - Total Dollars  
The total fiscal allotment for local educational agencies from state and local revenue sources (C780+C820).
- C845      Total State/Local Program - Dollars Per Pupil  
The total state/local program - total dollars (C840) divided by total pupils (C500).
- C848      Total State/Local Program - Dollars Per Unit  
The total state/local program - total dollars (C840) divided by total program units (C600+C640+C650).
- C850      Non-Utility Assessed Value - State Property Base  
The sum of the assessed valuation for Non-Utility property in the state (B030, B032, B033, and B035) by the proposed rate (D660).
- C851      Utility Assessed Value - State Property Base  
The sum of the assessed valuation for utility property in the state (B031, B034, and B036) by the proposed rate (D661).
- C852      Class 1 Property - State Yield  
The sum of the assessed valuation of all Class 1 property (B030 and B031) by the respective proposed rates (D600 and D661), with the yield being determined by taking the sum of the above by the desired millage (D662).
- C853      Class 2 Property - State Yield  
The sum of the assessed valuation of Class 2 property (B032) by the proposed rate (D663), with the yield being determined by taking the above by the desired millage (D664).
- C854      Classes 3 & 4 Property - State Yield  
The sums of the assessed valuation for all Class 3 and 4 property, Non-Utility (B033 and B035), and Utility (B034 and B036) by the respective proposed rates (D660 and D661), with the yield being determined by taking the sum of the above by the desired millage (D664).

## APPENDIX C - Continued

- C855      Total Property Assessed Value - State Property Base  
Total assessed value of all properties (C850 and C851).
- C856      Total State Property Tax Yield  
The dollar yield from a state property tax (C852+C853+C854).
- C860      Personal Income (AGI) - Yield  
The dollar yield from a state wide personal income tax (D601) for the state general fund.
- C870      Sales and Gross Receipts - Yield  
The dollar yield from a state wide sales and gross receipts tax (D603) for the state general fund.
- C880      Corporate Income - Yield  
The dollar yield from a state wide corporate income tax (D602) for the state general fund.
- C890      Estate, Gift, and Other - Yield  
The dollar yield from estate, gift, and other (D604) for the state general fund.
- C900      Property - Local Yield  
The dollar yield from local property taxes (C791+C792+C793+C794+C796) levied for the local educational agency.
- C905      Property - Local Yield Per Pupil  
Total yield of local property taxes (C900) divided by total pupils (C500).
- C908      Property - Local Yield Per Unit  
Total yield of local property taxes (C900) divided by total program units (C600+C640+C650).
- C910      Personal Income (AGI) - Local Yield  
The dollar yield from local personal income taxes (D621, D631, D641, and/or D651) levied for the local educational agency.

## APPENDIX C - Continued

- C915      Personal Income (AGI) - Local Yield Per Pupil  
Total yield of local personal income taxes (C910) divided by total pupils (C500).
- C918      Personal Income (AGI) - Local Yield Per Unit  
Total yield of local personal income taxes (C910) divided by total program units (C600+C640+C650).
- C920      Sales and Gross Receipts - Local Yield  
The dollar yield from local sales and gross receipt taxes (C622, D632, D642, and/or D652) levied for the local educational agency.
- C925      Sales and Gross Receipts - Local Yield Per Pupil  
Total yield of local sales and gross receipt taxes (C920) divided by total pupils (C500).
- C928      Sales and Gross Receipts - Local Yield Per Unit  
Total yield of local sales and gross receipt taxes (C920) divided by total program units (C600+C640+C650).
- C930      Net Current Expenditure (NCE)  
Sum of net current expenditures computed on the basis of the inputted pupil decisions.
- C935      Net Current Expenditure - Dollars Per Pupil  
Net current expenditures (C930) divided by total pupils (C500).
- C940      NCE, Social Security, Teacher Retirement and Other  
Sum of NCE, social security, teacher retirement, and other expenditures computed on the basis of the inputted pupil decisions.
- C945      NCE, Social Security, Teacher Retirement, and Other - Dollars Per Pupil  
Sum of NCE, social security, teacher retirement, and other expenditure (C940) divided by total pupils (C500).

## APPENDIX C - Continued

- C950 NEC, Social Security, Teacher Retirement, Other, and Transportation
- The sum of NCE, social security, teacher retirement expenditures, other (C940), and transportation actual costs (B364).
- C955 NCE, Social Security, Teacher Retirement, Other, and Transportation - Dollars Per Pupil
- Sum of NCE, social security, teacher retirement, other, and transportation expenditures (C950) divided by total pupils (C500).
- C960 Total Current Expenditure (TCE)
- The sum of NCE, social security, teacher retirement, other, and transportation expenditures (C950) and school food service actual costs (C373).
- C965 Total Current Expenditures - Dollars Per Pupil
- Total current expenditures (C960) divided by total pupils (C500).
- C967 Tax Progressivity
- A score computed by weighting the dollar yield of each of the local and state taxes by its corresponding progressivity weight to arrive at a progressivity score reflecting the district's tax progressivity under the inputted revenue source decisions. (For further detail, see Volume 5, Chapter 9, of the NEFP project findings.)
- C970 Deviation From Full Equalization
- A percent deviation showing a comparison of the district's total state program (C840) under the inputted formula to a program where the total state and local dollars (sum C840) are allocated on a flat allocation program unit basis (C600). Thus if the percent deviation is positive, this indicates the district would do better under the inputted formula than if all dollars were allocated on the flat allocation per program unit basis (C600).
- C971 Current Formula - Basic Program State Dollars
- Total state dollars allocated to the districts which includes Allocation For Professional Educators (B001), Allowance For Other Personnel - Part B (B003), Allowance For Fixed Charges

## APPENDIX C - Continued

(B004), Allowance For Administrative Costs (B006), Allowance For Other Current Expenses (B008), General School Fund Distribution (B009), Incentive For Program Improvement (B011), Supplemental Early Childhood Aides (B012), Supplemental Teacher's Salaries (B013), Supplemental Service and Auxiliary Service Salaries (B014), State Aid For Increased Enrollment (B016), Special Education Out Of Formula Grants (B017), Special Education Out Of Formula Allocation For Homebound Instruction (B018), Additional Special Education Out Of Formula Grants (B019), Vocational Day School (B023), and Vocational Act Of 1968 State Allocations (B026).

C972 Current Formula - Basic Program State Dollars Per Pupil

The basic state dollars under the current formula (C971) divided by total pupils (C500).

C974 Current Formula - Basic Program Local Dollars

The basic local dollars required under the current formula (B010).

C975 Current Formula - Basic Program Local Dollars Per Pupil

The basic local dollars required under the current formula (B010) divided by total pupils (C500).

C977 Current Formula - Transportation Dollars

The basic state dollars under the current formula for transportation (B002-B005).

C978 Current Formula - Transportation Dollars Per Transported Pupil

The basic state dollars under the current formula for transportation (C977) divided by number of transported students (B361).

C979 Current Formula - Capital Outlay Dollars (Approved)

The basic state dollars approved for capital outlay expenditures (B365).

C980 Current Formula - Capital Outlay Dollars (Approved) Per Pupil

The basic state dollars approved for capital outlay expenditures (B365) divided by total pupils (C500).

## APPENDIX C - Continued

- C981      Current Formula - Total State and Local Dollars (Basic Only)  
The total dollars allocated for the basic state and local program (C971+C974).
- C982      Current Formula - Total State and Local Dollars (Basic Only) Per Pupil  
The total dollars allocated for the basic state and local program (C981) divided by total pupils (C500).
- C984      Comparisons - Difference Current Basic State Dollars to Proposed Basic State Dollars  
The difference between the current basic state dollars and proposed basic state dollars (C971-C740).
- C985      Comparisons - Difference Current Basic State Dollars to Proposed Basic State Dollars Per Pupil  
The difference between the current basic state dollars and proposed basic state dollars (C984) divided by total pupils (C500).
- C986      Comparisons - Difference Current Basic Local Dollars to Proposed Basic Local Dollars  
The difference between the current basic local dollars and proposed basic local dollars (C974-C790).
- C987      Comparisons - Difference Current Basic Local Dollars to Proposed Basic Local Dollars Per Pupil  
The difference between the current basic local dollars and proposed basic local dollars (C986) divided by total pupils (C500).
- C988      Comparisons - Difference Current Transportation Dollars to Proposed Transportation Dollars  
The difference between the current transportation dollars and the proposed transportation dollars, both required effort and state allotment [C977-(C610+C615)].
- C989      Comparisons - Difference Current Transportation Dollars to Proposed Transportation Dollars Per Transported Pupils  
The difference between the current transportation dollars and the proposed transportation dollars (C988) divided by the number of transported pupils (B361).

## APPENDIX C - Continued

- C990 Comparisons - Difference Current Capital Outlay Dollars to Proposed Capital Outlay Dollars
- The difference between the current capital outlay dollars and the proposed capital outlay dollars, both required effort and state allotment  $[C979-(C620+C625)]$ .
- C991 Comparisons - Difference Current Capital Outlay Dollars to Proposed Capital Outlay Dollars Per Pupil
- The difference between the current capital outlay dollars and the proposed capital outlay dollars (C990) divided by total pupils (C500).
- C992 Comparisons - Difference Present State/Local/Transportation/Capital Outlay Dollars to Proposed State/Local/Transportation/Capital Outlay Dollars
- The difference between the current state, local, transportation, and capital outlay dollars and the proposed state, local, transportation, and capital outlay dollars  $[(C971+C974+C977+C979)-C840]$ .
- C993 Comparisons - Difference Present State/Local/Transportation/Capital Outlay Dollars to Proposed State/Local/Transportation/Capital Outlay Dollars Per Pupil
- The difference between the current state, local, transportation, and capital outlay dollars and the proposed state, local, transportation, and capital outlay dollars (C992) divided by total pupils (C500).



APPENDIX D  
INPUT DECISIONS

WEST VIRGINIA PUBLIC SCHOOL FINANCE  
SIMULATION MODEL

## INPUT DECISIONS

(Form A)

### SET I: PROGRAM DECISIONS

Program decisions refer to:

- (1) the programs and the unit which are to be used in determining the state program
- (2) the application of cost differentials, and
- (3) the special services and facilities and selected modifying factors which are to be provided.

### SET II: DISTRIBUTION DECISIONS

Distribution decisions refer to:

- (1) the total amount of state and local funds which will be provided to support a basic state program,
- (2) procedures for distributing the cost of this program, and
- (3) procedures for providing incentives based on local tax leeway.

### SET III: REVENUE DECISIONS

Revenue decisions refer to:

- (1) the major tax sources, both state and local, which are to be used to provide funds for public elementary education, and
- (2) the rates which are to be applied to the various tax sources.

## APPENDIX D - Continued

S E T I  
P R O G R A M   D E C I S I O N S

## ALTERNATIVE DECISION POINTS

SECTION I:     PROGRAM UNIT

SECTION II:    SPECIAL SERVICES AND FACILITIES

SECTION III:   MODIFYING FACTORS

-----  
BASE DATA

<u>PROGRAMS</u>	<u>WEST VIRGINIA TARGET POPULATION*</u>
Basic Early Childhood	
4 yr. olds	(no data)
Kindergarten	14,824.0
Basic Elementary and Secondary	
Elementary	193,961.0
Secondary	146,834.7
Special/Exceptional	
Educable Mentally Retarded	7,618.5
Trainable Mentally Retarded	1,242.1
Learning Disabilities	2,517.7
Behavioral Disorders	554.9
Physically Handicapped	186.8
Multiple Handicapped	206.4
Visually Handicapped	30.2

## APPENDIX D - Continued

<u>PROGRAMS</u>	<u>WEST VIRGINIA TARGET POPULATION*</u>
Auditorily Handicapped	72.6
Communication Disorders	428.7
Homebound	185.2
Gifted	492.2
Vocational/Technical	
Agriculture	1,353.1
Distributive	849.2
Health	317.8
Home Economics	3,430.3
Business/Office	7,092.2
Technical	312.8
Industrial	5,922.5
Other Vocational	<u>292.7</u>
TOTAL	388,725.6
Compensatory	
Low Income	122,074.0
Low Achievement	8,126.6

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\*Target Populations are 1975-76 FTE (full time equivalent) students.

## APPENDIX D - Continued

## SECTION I: PROGRAM UNIT

**Explanation:** Program Unit refers to decisions concerning both the programs (kindergarten, basic, etc.) and the unit (ENR, ADM, or FTE, and pupil or instructional, unweighted or weighted) which are to be used in the determination of the state program.

Do you wish to include early childhood pupils in your computation of the state program? If "yes" check the appropriate boxes.

## Early Childhood

4 yr. olds

Yes

☐

101

(n.a.)

Kindergarten  
(5 yr. olds)

Yes

☐

102

**Explanation:** Check the unit (ENR, ADM, or FTE, and pupil or instructional, unweighted or unweighted) which you wish to use and provide the requested information.

ENR

Yes

☐

103

(n.a.)

ADM

Yes

☐

104

(n.a.)

FTE

Yes

☐

105

## A. UNWEIGHTED PUPIL UNIT

**Explanation:** A "yes" indicates that you wish to use the unweighted pupil unit in the computation of the state program.

Yes

☐

110

## B. UNWEIGHTED INSTRUCTIONAL UNIT

**Explanation:** If you wish to use the unweighted instructional unit in the computation of the state program, fill in a proposed number of pupils per instructional unit. (Example: instructional unit: 25 pupils.)

Proposed  
Inst. Unit

— 115 pupils

## APPENDIX D - Continued

## C. WEIGHTED PUPIL UNIT

Explanation: If you wish to use a weighted pupil unit in the computation of the state program, provide the requested information.

Note: For calculated West Virginia cost index weightings, see cover sheet of Set I (Program Decisions-Base Data).

## PROGRAMS

## Early Childhood

Proposed Weighting  
For Cost Index

4 yr. olds

Note: Early childhood pupils are included or excluded in your state program dependent on your decision in Section I (Program Unit).

$$\frac{x}{121} \cdot \frac{x}{121} \cdot \frac{x}{121}$$
Kindergarten  
(5 yr. olds)
$$\frac{---}{122}$$

## Basic Elementary and Secondary

Elementary

$$\frac{---}{123}$$

Secondary

$$\frac{---}{124}$$

You must make a decision regarding Special/  
Exceptional Pupil Counts (Choose one)

Count pupils by malady

Yes

☐

116

Count pupils by delivery  
system

Yes

☐

117

Special/Exceptional (Choose FTE students or Delivery System)

Educable Mentally Handicapped

$$\frac{---}{126}$$

Trainable Mentally Handicapped

$$\frac{---}{127}$$

Learning Disabilities

$$\frac{---}{128}$$

## APPENDIX D - Continued

## Special/Exceptional (Continued)

Behavioral Disorders	— . 129 —
Physically Handicapped	— . 130 —
Multiple Handicapped	— . 131 —
Visually Handicapped	— . 132 —
Auditorily Handicapped	— . 133 —
Communication Disorders	— . 134 —
Homebound	— . 135 —
Gifted	— . 136 —

## Delivery System Special/Educational

System 1 - Self Contained	— . 137 —
System 2 - Resource	— . 138 —
System 3 - Itinerant	— . 139 —
System 4 - Option	X . <del>X</del> <del>140</del> X

## Vocational/Technical

Agriculture	— . 186 —
Distributive	— . 187 —
Health	— . 188 —
Home Economics	— . 189 —
Business/Office	— . 190 —
Technical	— . 191 —
Industrial	— . 192 —
Other Vocational (Code 99)	— . 193 —

## APPENDIX D - Continued

## Compensatory

Low Income

Low Achievement

Note: You have two alternatives on compen- satory pupils (choose one).
---

— . 178 —— . 179 —



## APPENDIX D - Continued

## D. WEIGHTED INSTRUCTIONAL UNIT

Explanation: If you wish to use a weighted instructional unit in the computation of the state program, provide the requested information for either Column (1) or Column (2).

PROGRAMS	(1) Proposed Weighting for Cost Index	(2) Proposed Instructional Unit
Early Childhood		
4 yr. olds	$\frac{x}{x} \cdot \frac{x}{121} \frac{x}{x}$	$\frac{x}{x} \frac{x}{141}$
Kindergarten (5 yr. olds)	$\frac{x}{x} \cdot \frac{x}{122} \frac{x}{x}$	$\frac{x}{x} \frac{x}{142}$
<div style="border: 1px solid black; padding: 5px; display: inline-block;">           Note: Early childhood pupils are included in your state program dependent on your decision in Section I (Program Unit).         </div>		
Basic Elementary and Secondary		
Elementary	$\frac{x}{x} \cdot \frac{x}{123} \frac{x}{x}$	$\frac{x}{x} \frac{x}{143}$
Secondary	$\frac{x}{x} \cdot \frac{x}{124} \frac{x}{x}$	$\frac{x}{x} \frac{x}{144}$
Special/Exceptional (Choose FTE/Student or Delivery System)		
Educable Mentally Handicapped	$\frac{x}{x} \cdot \frac{x}{126} \frac{x}{x}$	$\frac{x}{x} \frac{x}{146}$
Trainable Mentally Handicapped	$\frac{x}{x} \cdot \frac{x}{127} \frac{x}{x}$	$\frac{x}{x} \frac{x}{147}$
Learning Disabilities	$\frac{x}{x} \cdot \frac{x}{128} \frac{x}{x}$	$\frac{x}{x} \frac{x}{148}$
Behavioral Disabilities	$\frac{x}{x} \cdot \frac{x}{129} \frac{x}{x}$	$\frac{x}{x} \frac{x}{149}$
Physically Handicapped	$\frac{x}{x} \cdot \frac{x}{130} \frac{x}{x}$	$\frac{x}{x} \frac{x}{150}$
Multiple Handicapped	$\frac{x}{x} \cdot \frac{x}{131} \frac{x}{x}$	$\frac{x}{x} \frac{x}{151}$
Visually Handicapped	$\frac{x}{x} \cdot \frac{x}{132} \frac{x}{x}$	$\frac{x}{x} \frac{x}{152}$
Auditorily Handicapped	$\frac{x}{x} \cdot \frac{x}{133} \frac{x}{x}$	$\frac{x}{x} \frac{x}{153}$
Communication Disorders	$\frac{x}{x} \cdot \frac{x}{134} \frac{x}{x}$	$\frac{x}{x} \frac{x}{154}$

## APPENDIX D - Continued

## Special/Exceptional (Continued)

Homebound	— • 135 —	155
Gifted	— • 136 —	156

## Delivery System Special/Exceptional

System 1 - Self Contained	— • 137 —	D157
System 2 - Resource	— • 138 —	D158
System 3 - Itinerant	— • 139 —	D159
System 4 - Option	— • 140 —	D160

## Vocational/Technical

Agriculture	— • 186 —	231
Distributive	— • 187 —	232
Health	— • 188 —	233
Home Economics	— • 189 —	234
Business/Office	— • 190 —	235
Technical	— • 191 —	236
Industrial	— • 192 —	237
Other Vocational (Code 99)	— • 193 —	238

## Compensatory

Low Income	— • 178 —	239
Low Achievement	— • 179 —	240

Note: You have two alternatives on compensatory pupils (choose one).

## APPENDIX D - Continued

## SECTION II: SPECIAL SERVICES &amp; FACILITIES

Explanation: Special services and facilities refers to transportation capital outlay and debt service, and school food service.

Check only those special services and facilities which you wish to include as a part of the state program and provide the requested information.

## A. TRANSPORTATION

## Present Expenditures (1976)

Allocation Drivers Salaries	\$11,368,487
Approved Costs	\$25,005,755
Actual Costs	\$29,512,983

## Alternatives (Choose one)

1. State allotment of a flat grant per transported pupil. \$ 161
2. Local ownership and operation with state payment of approved costs. Yes ☐ 162
3. State allotment of a fixed percentage of actual costs. 163 %
4. Equalized grant for actual costs with X mills local effort required. 164 mills\*
5. State assumption of full program. Yes ☐ 165

\*Class 1 Non-Utility @ 11.8757% and Utility @ 24.375%.

Class 2 @ 23.75%, Classes 3 and 4 - Non-Utility @ 47.5% and Utility @ 97.5%.

## APPENDIX D - Continued

## B. CAPITAL OUTLAY AND DEBT SERVICE

## Present Expenditures (1977)

Debt Service	\$ 15,199,306
Approved Project	\$ 85,502,472
Actual Project	\$184,264,727

## Alternatives (Choose one)

- State allotment of a flat grant for depreciation allowance.
 

Per Pupil	\$	<u>170</u>	
or			
Per Inst. Unit	\$	<u>171</u>	
- State allotment of a fixed percentage of approved project cost.
 

<u>172</u>	%
------------	---
- State allotment of approved project cost (100%).
 

Yes
<input type="checkbox"/>
<u>173</u>
- Equalized grant for depreciation allowance with X mills local effort required.
 

Per Pupil	\$	<u>      </u>	<u>174</u> mills*
or			
Per Inst. Unit	\$	<u>171</u>	
- Equalized grant for actual debt service with X mills local effort required.
 

<u>175</u>	mills*
------------	--------
- Equalized grant for approved project cost with X mills local effort required.
 

<u>176</u>	mills*
------------	--------
- Equalized grant for actual project costs with X mills local effort required.
 

<u>177</u>	mills*
------------	--------

\*Class 1 Non-Utility @ 11.875% and Utility @ 24.375%.

Class 2 @ 23.75%, Classes 3 and 4 - Non-Utility @ 47.5% and Utility @ 97.5%.



## APPENDIX D - Continued

## SECTION III: MODIFYING FACTORS

Explanation: Modifying factors refer to those additional factors besides the special services and facilities that you wish to be included in the state program.

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Explanation: For A through D check those modifying factors which you wish to include in the form of an adjustment in the state program and provide the requested information.

## A. RECOGNITION OF ADMINISTRATIVE, SUPERVISORY, AND AUXILIARY SERVICES

Explanation: Additional funding units may be allocated to recognize administrative, supervisory and auxiliary service (ASAS). You have two alternatives from which you may choose in determining the additional units.

Alternatives (Choose one)

1. Additional units for administrative, supervisory and auxiliary service based on a percentage.
 

$$\frac{\text{---}}{200} \cdot \frac{\text{---}}{\text{---}} \% \text{ of units determined from Section I (Program Unit)}$$
2. Additional units for administrative, supervisory and auxiliary service based on a ratio.
 

$$\frac{\text{---}}{201} / \frac{\text{---}}{\text{---}} \text{ ratio of units determined from Section I (Program Unit) per ASAS unit}$$

- Examples:
1. If you choose D200 = 3%, then the number of pupil units used for funding will be increased to 103% for each district. If district #1 has 1000 pupil units (weighted or unweighted) then D200 = 3% would increase the pupil units to be funded to 1,030.
  2. If you choose D201 = 50/1, then the number of pupil units used for funding will be increased for each district by a ratio of one additional unit for each 50 pupil units (weighted or unweighted). If district #1 has 1000 pupil units, then D201 = 50 would increase the pupil units to be funded to 1,020.

## APPENDIX D - Continued

## B. SPARSITY

Explanation: Additional units for schools with less than 200 pupils.

	Size of School	Proposed Pupil Weightings
Elementary	150 - 200	— . $\frac{\quad}{205}$ —
	100 - 149	— . $\frac{\quad}{206}$ —
	less than 100	— . $\frac{\quad}{207}$ —
Secondary	150 - 200	— . $\frac{\quad}{211}$ —
	100 - 149	— . $\frac{\quad}{212}$ —
	less than 100	— . $\frac{\quad}{213}$ —

## APPENDIX D - Continued

## C. EDUCATIONAL TRAINING AND EXPERIENCE

Explanation: A "yes" indicates that you wish to use the following prototype indices in recognizing educational training and experience of professional staff as an adjustment in the state program.

Yes

☐

220

## Training Level

Experience Level (Yrs.)	Less than B.S.	B.S.	M.S.	M.S.+30	Doctorate
0-2	.80	.95	1.05	1.20	1.25
3-6	.80	.95	1.05	1.20	1.25
7-11	.80	1.00	1.10	1.20	1.25
12-17	.85	1.00	1.10	1.25	1.25
over 18	.85	1.00	1.15	1.25	1.25

## D. COST OF LIVING

Explanation: A "yes" indicates that you wish to recognize cost of living as an adjustment in the state program. (Below is an illustration of a possible formula.)

Cost of Living Index Dist. = Adjustment Index  
 Cost of Living Index State

Yes

☐

(n.a.)

225



## APPENDIX D - Continued

Explanation: For E through H check those modifying factors which you wish to include in the form of a special allotment as a part of the state program and provide the requested information.

## E. SPECIAL PROGRAM ALLOTMENTS

Explanation: Select those programs for which you wish to provide special allotments and provide the requested information. (All pupil units are expressed as FTE--full time equivalents.)

Note: If you used a weighted unit in Section I (Program Unit) for a particular program, then do not complete that corresponding section here.

## 1. Early Childhood

\$ \_\_\_\_\_ per pupil in early childhood program (4 yr. olds  
250 and K)

## 2. Special and/or Exceptional

\$ \_\_\_\_\_ per mentally handicapped pupil (EMR & TMR)  
251

\$ \_\_\_\_\_ per physically handicapped pupil (Phy., Mult.,  
252 Visual, Auditory, Homebound)

\$ \_\_\_\_\_ per behavioral disorder pupil  
253

\$ \_\_\_\_\_ per special learning disabilities pupil  
254

\$ \_\_\_\_\_ per communications disorders pupil  
255

## 3. Vocational-Technical

\$ \_\_\_\_\_ per pupil in vocational-technical education  
256

## 4. Compensatory

\$ \_\_\_\_\_ per pupil from family with low income  
257

\$ \_\_\_\_\_ per low achievement pupil  
258

## APPENDIX D - Continued

## F. ACHIEVEMENT (n.a.)

Explanation: Special allotment for achievement.

\$        260        per pupil below 25th percentile

## G. INNOVATION

Explanation: Special allotment for approved cost of innovative programs.

\$        270        per pupil

## APPENDIX D - Continued

S E T   I I  
D I S T R I B U T I O N   D E C I S I O N S

## ALTERNATIVE DECISION POINTS

SECTION I:    BASIC STATE PROGRAM

SECTION II:   BASIC DISTRIBUTION METHOD

SECTION III:  INCENTIVE DISTRIBUTION METHOD

## APPENDIX D - Continued

## SECTION I: BASIC STATE PROGRAM

Explanation: The basic state program refers to the fiscal allotment for local educational agencies from state and/or local revenue sources; this amount does not include special state allotments for school services and facilities, modifying factors, or incentive programs, and also does not include any local fiscal effort required for participation in these latter programs.

Note: If you desire the flat grant plus uniform local tax rate distribution method (Section II), omit this page. Specifying the flat grant plus the uniform local tax rate will determine the cost of the basic state program.

-----

Explanation: You have three alternatives from which to choose to arrive at the cost of the basic state program. Check the method you wish to use and provide the requested information.

- A. The cost of the basic state program should be determined by applying a dollar cost to the units determined in Set I - Section I (Program Unit). \$       400       per unit
- B. The cost of the basic state program should be based on a proposed amount of funds to be made available in the basic state program. Proposed Amount  
\$       401
- C. The cost of the basic state program should be based on a percentage of the state general fund which is determined in Set III - Section I (State Tax Sources).       402       %

## APPENDIX D - Continued

## SECTION II: BASIC DISTRIBUTION METHOD

Explanation: The basic distribution method refers only to procedures for distributing the cost of the basic state program.

The basic funds provided by the state, together with the local educational agency, will equal the cost of the basic state program. The unit (pupil or instructional, weighted or unweighted) is based on a decision which is made in Set I - Section I (Program Unit).

Note: Decisions in regard to state and local tax bases and rates are made in Set III (Revenue Decisions).

Explanation: Choose one distribution method which you wish to use and provide the requested information.

- A. FULL STATE SUPPORT of the cost of the basic state program.

Explanation: Under this method the state provides the full cost of the basic state program.

Yes  
☐  
 420

- B. FLAT GRANT plus UNIFORM LOCAL TAX RATE to support the cost of the basic state program.

Explanation: The method involves a flat grant per unit from the state plus a required local effort. This effort is a mandated tax which each local educational agency is required to levy at a uniform rate.

The flat grant should be based on a proposed \$ 425 per unit amount per unit.

- C. UNIFORM STATE MATCHING GRANT plus VARIABLE LOCAL EFFORT to support the cost of the basic state program.

Explanation: A uniform state matching grant is one in which the state provides a fixed percentage of the cost of the basic state program. The difference is provided by a variable local effort. Specify state percentage. 430 %

- D. UNIFORM LOCAL TAX RATE plus VARIABLE STATE GRANT to support the cost of the basic state program.

## APPENDIX D - Continued

## D. (Continued)

Explanation: Under this method each local educational agency is required to levy a tax at a rate which is uniform in each district. The difference between the cost of the basic state program and the amount provided by the required local levy is supplied by the state.

Yes  
☐  
 435

## E. PERCENTAGE STATE AND LOCAL SHARING of the cost of the basic state program.

Explanation: Under this method the local educational agency's contribution to the cost of the basic state program varies according to its financial ability relative to the state average.

Yes  
☐  
 440

The general form of the computational formula is:

$$A \quad 1 - \left( \frac{D \times E}{S} \right) = \text{Basic State Aid, where}$$

- A = cost of basic state program  
 D = district's financial ability  
 S = state average financial ability  
 E = a predetermined constant based on the percentage of the cost of the basic state program which would be provided by a district of average financial ability.

The decision with regard to A was made in Section I (Basic State Program). To determine D and S, a decision is required with regard to financial ability which is defined as a tax base per unit. Thus, select both a base and a unit. Since a combination is possible for each, indicate the percentages you wish. If you choose a single financial ability measure, indicate the percentage as 100.

## APPENDIX D - Continued

BASE	PERCENTAGE*	UNIT	PERCENTAGE*
		Per Capita	$\frac{\quad}{450} \cdot \frac{\quad}{\quad}$
**Property	$\frac{\quad}{445} \cdot \frac{\quad}{\quad}$	ENR	$\frac{x}{\quad} \frac{x}{452} \frac{x}{\quad} \cdot \frac{x}{\quad}$
Personal Income	$\frac{\quad}{446} \cdot \frac{\quad}{\quad}$	ADM	$\frac{x}{\quad} \frac{x}{453} \frac{x}{\quad} \cdot \frac{x}{\quad}$
Sales & Gross	$\frac{\quad}{447} \cdot \frac{\quad}{\quad}$	FTE	$\frac{\quad}{454} \cdot \frac{\quad}{\quad}$

---

\*Be sure the percentages add to 100 if you elect to use a combination measure.

\*\*Based on current assessment ratios of 47.5% and 97.5% for respective classes.

To determine E (the predetermined constant), a percentage is required. Specify E.

$\frac{\quad}{460} \cdot \frac{\quad}{\quad} \%$

## APPENDIX D - Continued

- F. STATE GUARANTEED YIELD from uniform taxes levied determines the cost of the basic program.

The general form of the computational formula is:

State's Allotment =  $R ( A - B )$ , where

$R$  = mandatory rate

$A$  = state guaranteed yield per unit

$B$  = district property yield per unit

The decision with regard to  $R$  is made in Set III - Section I.

To determine  $A$ , a decision is required with regard to a state guaranteed yield per unit (D470), and in regard to the unit Section I - Section I (Program Unit).

— — — — — D470 — — — — — guaranteed  
yield per  
unit.



## APPENDIX D - Continued

SECTION III: INCENTIVE DISTRIBUTION  
METHOD

Explanation: The following are distribution methods for providing incentive for local educational agencies levying leeway taxes.

If you do not wish to use a local incentive, omit this page; otherwise, check the appropriate method and provide the requested information. The unit (pupil or instructional, weighted or unweighted) is based on a decision which is made in Set I - Section I (Program Unit).

Note: Decisions in regard to the tax bases and rates for local tax leeway are made in Set III (Revenue Decisions).

Explanation: Check the incentive method which you wish to use and provide the requested information.

- A. Incentive grant by matching local leeway taxes by a flat grant allotment.      \$ 480 allotment per unit for each mill (or percent) of local leeway tax levied.
- B. Incentive grant by matching local leeway taxes in same ratio as provided in basic state program.      Yes ☐ 485
- C. Incentive grant based on a state guaranteed allotment per each mill (or percent) of the local leeway tax levied.

The general form of the computational formula is:

$R (A - B) = \text{State's Allotment}$ , where

R = rate of local leeway tax

A = state guaranteed allotment per unit (this allotment is supplemental to the basic state program)

B = tax yield per unit from one mill (or percent) of the local leeway tax

## APPENDIX D - Continued

## C. (Continued)

The decision with regard to R is made in Set III - Section II (Local Leeway Taxes). Values for B are fixed and are presented on the cover sheet of Set III (Revenue Decisions - Base Data). To determine A, a decision is required with regard to both a state guaranteed allotment and a unit. The decision with regard to the unit was made in Set I - Section I (Program Unit). Specify the guaranteed allotment.

\$ 490 guaranteed  
allotment  
per unit

## APPENDIX D - Continued

S E T   I I I  
R E V E N U E   D E C I S I O N S

## ALTERNATIVE DECISION POINTS

SECTION I:     STATE TAX SOURCES

SECTION II:    LOCAL TAX SOURCES

-----  
BASE DATA

Tax		Total Dollars
Property		
Non-Utility		
Utility		
Personal Income	Present yield	135,437,348
Corporate Income	Present yield	14,151,218
Sales Tax	Present yield	131,649,473
Estate, Gift & Other	Present yield	387,215,399

## APPENDIX D - Continued

SECTION I: STATE TAX SOURCES FOR  
EDUCATION FUND

(Not now available)

Explanation: State tax sources refers to decisions concerning bases and rates for major tax sources for the state general fund. Select the source you wish to use and give a proposed tax rate. (If you select the Estate, Gift and Other tax source, give a proposed dollar yield.)

Based on the major tax sources currently being used in the state, the state general fund is \$668,453,438 (1975-76).

Note: In Set II - Section I (Basic State Program) if you select alternative C (Percentage of state general fund), you must complete this page. The percentage is based on the amount of the state general fund determined in this Section.

BASE	PRESENT RATE	PROPOSED RATE
Property		
Assessment: Percent of Appraised Value		
Non-Utility	___ . ___ %	___ <u>660</u> . ___ %
Utility	___ . ___ %	___ <u>661</u> . ___ %
Rates		
Class 1	___ . ___	___ <u>662</u> . ___ mills
Class 2	___ . ___	___ <u>663</u> . ___ mills
Class 3 & 4	___ . ___	___ <u>664</u> . ___ mills
Personal Income	___ . ___	___ <u>601</u> . ___ %
Corporate Income	___ . ___	___ <u>602</u> . ___ %
Sales & Gross Receipts	___ . ___	___ <u>603</u> . ___ %
Estate, Gift & Other	\$	___ <u>604</u> . ___

## APPENDIX D - Continued

## SECTION II: LOCAL TAX SOURCES

Explanation: Local tax sources refers to decisions concerning bases and rates for required local effort and local tax leeway.

## A. REQUIRED LOCAL EFFORT

Explanation: If you select a required local effort as part of the basic state program in Set II - Section II (Basic Distribution Method), you have two alternatives from which to choose in specifying the local tax base and rate.

Note: In Set II - Section II (Basic Distribution Method) if you select flat grant plus uniform local tax rate, complete Alternative 1; if you select uniform state matching grant or percentage of state and local sharing, complete Alternative 2.

-----  
Alternatives (Choose one)

## 1. UNIFORM RATE for the required local effort.

Explanation: Basic state program where the local effort is based on a rate which is uniform in each district. Specify rate.

BASE

PROPOSED RATE

Property

Assessment: Percent of  
Appraised Value

Non-Utility

\_\_\_\_ . \_\_\_\_  
610 %

Utility

\_\_\_\_ . \_\_\_\_  
611 %

Rates

Class 1

\_\_\_\_ . \_\_\_\_ mills  
612

Class 2

\_\_\_\_ . \_\_\_\_ mills  
613

Class 3 &amp; 4

\_\_\_\_ . \_\_\_\_ mills  
614

Personal Income

\_\_\_\_ . \_\_\_\_  
621 %

Sales &amp; Gross Receipts

\_\_\_\_ . \_\_\_\_  
622 %

## APPENDIX D - Continued

## 2. VARIABLE RATE for the required local effort.

Explanation: Basic state program where the local effort is based on a rate which is variable in each district. Specify percentage of local effort from each base. (The actual rate will be computed and presented in an output display.)

BASE	PERCENTAGE*
Property	— — $\overline{630}$ . —
Personal Income	— $\overline{631}$ . —
Sales & Gross Receipts	— $\overline{632}$ . —

---

\*Percentage must add to 100.

## APPENDIX D - Continued

## B. LOCAL TAX LEEWAY

Explanation: If you wish to use local tax leeway to allow the local educational agency to provide supplemental funds beyond the basic state program, provide the requested information; otherwise, omit this page.

Note: In Set II - Section III (Incentive Distribution Method) if you selected an incentive distribution method, you must complete this page. Incentive distribution methods assume local leeway taxes.

-----  
Alternatives (Choose one)

1. UNIFORM RATE for the local leeway taxes which you wish to use.  
Specify rate.

BASE	PROPOSED RATE
Property (all classes)	— <u>640</u> . — mills
Assessment: Percent of Appraised Value	
Non-Utility	— — <u>610</u> . — %
Utility	— — <u>611</u> . — %
Personal Income	— — <u>641</u> . — %
Sales & Gross Receipts	— — <u>642</u> . — %

Note: If uniform rate was chosen on p. 25, these percentages must be the same.

2. VARIABLE RATE for the local leeway taxes with an amount based on a maximum of 105% of the local educational agencies expenditures for the previous year. Specify percentage of local leeway tax from each base. (The actual rate will be computed and presented in an output display.)

BASE	PERCENTAGE*
Property	— — <u>650</u> . — %
Personal Income	— — <u>651</u> . — %
Sales & Gross Receipts	— — <u>652</u> . — %

\*Percentages must add to 100.

APPENDIX E

STATE FILE



```

0121=0121+0143/0143
0122=0122+0143/0142
0123=0123+0143/0143
0124=0124+0143/0144
0126=0126+0143/0145
0127=0127+0143/0147
0128=0128+0143/0145
0129=0129+0143/0149
0130=0130+0143/0150
0131=0131+0143/0151
0132=0132+0143/0152
0133=0133+0143/0153
0134=0134+0143/0154
0135=0135+0143/0155
0136=0136+0143/0156
0137=0137+0143/0157
0138=0138+0143/0158
0139=0139+0143/0159
0140=0140+0143/0160
0178=0178+0143/0239
0179=0179+0143/0240
0180=0180+0143/0231
0187=0187+0143/0232
0188=0188+0143/0233
0189=0189+0143/0234
0190=0190+0143/0235
0191=0191+0143/0236
0192=0192+0143/0237
0193=0193+0143/0238
SC01=0101+B115
SC02=0102+B1120
SC03=B125+B110
01145=01145+0150+0155+0160+0165+0170+0175+0180+0195+0199
SC05=0195+0200+0205+0210+0215+0220+0225+0230
SC06=0103+0101+0121+0122+0123+0124+0125+0126+0127+0128+0129+0130+0131+0132+0133+0134+0135+0136+0137+0138+0139+0140+0141+0142+0143+0144+0145+0146+0147+0148+0149+0150+0151+0152+0153+0154+0155+0156+0157+0158+0159+0160+0161+0162+0163+0164+0165+0166+0167+0168+0169+0170+0171+0172+0173+0174+0175+0176+0177+0178+0179+0180+0181+0182+0183+0184+0185+0186+0187+0188+0189+0190+0191+0192+0193+0194+0195+0196+0197+0198+0199+0200+0201+0202+0203+0204+0205+0206+0207+0208+0209+0210+0211+0212+0213+0214+0215+0216+0217+0218+0219+0220+0221+0222+0223+0224+0225+0226+0227+0228+0229+0230+0231+0232+0233+0234+0235+0236+0237+0238+0239+0240+0241+0242+0243+0244+0245+0246+0247+0248+0249+0250+0251+0252+0253+0254+0255+0256+0257+0258+0259+0260+0261+0262+0263+0264+0265+0266+0267+0268+0269+0270+0271+0272+0273+0274+0275+0276+0277+0278+0279+0280+0281+0282+0283+0284+0285+0286+0287+0288+0289+0290+0291+0292+0293+0294+0295+0296+0297+0298+0299+0300+0301+0302+0303+0304+0305+0306+0307+0308+0309+0310+0311+0312+0313+0314+0315+0316+0317+0318+0319+0320+0321+0322+0323+0324+0325+0326+0327+0328+0329+0330+0331+0332+0333+0334+0335+0336+0337+0338+0339+0340+0341+0342+0343+0344+0345+0346+0347+0348+0349+0350+0351+0352+0353+0354+0355+0356+0357+0358+0359+0360+0361+0362+0363+0364+0365+0366+0367+0368+0369+0370+0371+0372+0373+0374+0375+0376+0377+0378+0379+0380+0381+0382+0383+0384+0385+0386+0387+0388+0389+0390+0391+0392+0393+0394+0395+0396+0397+0398+0399+0400+0401+0402+0403+0404+0405+0406+0407+0408+0409+0410+0411+0412+0413+0414+0415+0416+0417+0418+0419+0420+0421+0422+0423+0424+0425+0426+0427+0428+0429+0430+0431+0432+0433+0434+0435+0436+0437+0438+0439+0440+0441+0442+0443+0444+0445+0446+0447+0448+0449+0450+0451+0452+0453+0454+0455+0456+0457+0458+0459+0460+0461+0462+0463+0464+0465+0466+0467+0468+0469+0470+0471+0472+0473+0474+0475+0476+0477+0478+0479+0480+0481+0482+0483+0484+0485+0486+0487+0488+0489+0490+0491+0492+0493+0494+0495+0496+0497+0498+0499+0500+0501+0502+0503+0504+0505+0506+0507+0508+0509+0510+0511+0512+0513+0514+0515+0516+0517+0518+0519+0520+0521+0522+0523+0524+0525+0526+0527+0528+0529+0530+0531+0532+0533+0534+0535+0536+0537+0538+0539+0540+0541+0542+0543+0544+0545+0546+0547+0548+0549+0550+0551+0552+0553+0554+0555+0556+0557+0558+0559+0560+0561+0562+0563+0564+0565+0566+0567+0568+0569+0570+0571+0572+0573+0574+0575+0576+0577+0578+0579+0580+0581+0582+0583+0584+0585+0586+0587+0588+0589+0590+0591+0592+0593+0594+0595+0596+0597+0598+0599+0600+0601+0602+0603+0604+0605+0606+0607+0608+0609+0610+0611+0612+0613+0614+0615+0616+0617+0618+0619+0620+0621+0622+0623+0624+0625+0626+0627+0628+0629+0630+0631+0632+0633+0634+0635+0636+0637+0638+0639+0640+0641+0642+0643+0644+0645+0646+0647+0648+0649+0650+0651+0652+0653+0654+0655+0656+0657+0658+0659+0660+0661+0662+0663+0664+0665+0666+0667+0668+0669+0670+0671+0672+0673+0674+0675+0676+0677+0678+0679+0680+0681+0682+0683+0684+0685+0686+0687+0688+0689+0690+0691+0692+0693+0694+0695+0696+0697+0698+0699+0700+0701+0702+0703+0704+0705+0706+0707+0708+0709+0710+0711+0712+0713+0714+0715+0716+0717+0718+0719+0720+0721+0722+0723+0724+0725+0726+0727+0728+0729+0730+0731+0732+0733+0734+0735+0736+0737+0738+0739+0740+0741+0742+0743+0744+0745+0746+0747+0748+0749+0750+0751+0752+0753+0754+0755+0756+0757+0758+0759+0760+0761+0762+0763+0764+0765+0766+0767+0768+0769+0770+0771+0772+0773+0774+0775+0776+0777+0778+0779+0780+0781+0782+0783+0784+0785+0786+0787+0788+0789+0790+0791+07
```

[illegible]

C780=C740+C750+C760+C770  
 C785=C780/C500  
 C788=C780/(C600+C640+C650)  
 C790=SC01\*SC02-C740  
 C791=C734\*D115/D115  
 C792=C735\*D115/D115  
 C793=C736\*D115/D115  
 C794=C737\*D115/D115  
 C795=C790/C500  
 C796=C738\*D115/D115  
 C798=C790/(C600+C640+C650)  
 C800=C610+C620+C630  
 C805=C800/C500  
 C808=C800/(C600+C640+C650)  
 C810=SC05  
 C815=C810/C500  
 C818=C810/(C600+C640+C650)  
 C820=C790+C800+C810  
 C825=C820/C500  
 C828=C820/(C600+C640+C650)  
 C830=SC01\*SC02  
 C835=C830/C500  
 C838=C830/(C600+C640+C650)  
 C840=C780+C820  
 C845=C840/C500  
 C848=C840/(C600+C640+C650)  
 C850=D660/100\*(SUM(B033)+SUM(B032)+SUM(B035))  
 C851=D661/100\*(SUM(B031)+SUM(B034)+SUM(B036))  
 C852=C731\*D115/D115  
 C853=C732\*D115/D115  
 C854=C733\*D115/D115  
 C855=C850+C851  
 C856=C852+C853+C854  
 C858=D648\*D601/100  
 C870=D694\*D603/100  
 C880=D695\*D602/100  
 C890=D604\*(R497/B497)  
 C900=C791+C792+C793+C794+C796  
 C905=C900/C500  
 C908=C900/(C600+C640+C650)  
 SC07=D621\*D641\*D631\*C790/D688\*D651\*(1.05\*SC03-C931)/B433  
 C910=D688\*SC07/100  
 C915=C910/C500  
 C918=C910/(C600+C640+C650)  
 SC07=D622\*D642\*D632\*C790/D694\*D652\*(1.05\*SC03-C8301/3495  
 C920=D694\*SC07/100  
 C925=C920/C500  
 C928=C920/(C600+C640+C650)  
 C930=SC08  
 C935=C930/C500  
 C940=C930/SC10  
 C945=C940/C500  
 C950=C940\*B364  
 C955=C950/C500  
 C950=C950\*B373  
 C965=C960/C500  
 C970=C840/(SUM(C8401/SUM(C6001+C600)  
 C970=(C970-11)\*100  
 C969=C906\*14+C910\*35+C920\*15+C780\*26.42  
 SC01=SUM(C850)\*14+SUM(C8401\*35+SUM(C670)\*15+SUM(C630)\*35+SUM(C890)\*14  
 SC01=SC01/(SUM(C850)+SUM(C8601)+SUM(C870)+SUM(C8801)+SUM(C890))  
 C969=(C969+C780\*(SC01-26.42))/C840  
 SC02=(C970+C9701)\*.5  
 SC02=SC02+C600  
 D940=SUM(SC021/SUM(C6001  
 D941=SUM(C903)\*14+SUM(C910)\*35+SUM(C920)\*15+SUM(C7801\*26.42  
 D941=(D941+SUM(C780)\*SC01)/SUM(C9471  
 SC01=1001+D003+D004+D006+D007+D008+D009+D011+D012+D013+D014+D015+D017  
 SC01=SC01+D018+D019+D023+D026  
 C971=SC01  
 C972=C971/C500  
 C973=C971/C600  
 C974=B010  
 C975=1010/C500  
 C976=1010/C600  
 C977=D002+D005  
 C978=C977/B361  
 C979=3265  
 C980=4355/C500  
 C981=C971+C974  
 C982=C981/C500  
 C983=C981/C600  
 C984=C971-C740  
 C985=C984/C500

C986=C574-C790  
C987=C586/C500  
C988=C977-(C610+C615)  
C989=C988/B301  
C990=C979-(C620+C625)  
C991=C590/C500  
C992=C571+C974+C977+C979-C840  
C993=C992/C500  
C994=C592/C600

APPENDIX F  
STATE AID, 1976-77

STATE AID, 1976-77  
\$ PER PUPIL IN ADJUSTED ENROLLMENT  
COUNTIES RANKED

<u>Foundation State Aid</u>			<u>Supplements Outside</u>		<u>Total (1) + (2)</u>	
<u>(1)</u>			<u>Of Formula*</u>		<u>(3)</u>	
			<u>(2)</u>			
1	Pendleton	\$697.62	Grant	\$193.33	Pendleton	\$860.22
2	Wirt	648.55	Pocahontas	173.24	Pocahontas	817.09
3	Pocahontas	643.85	Pendleton	162.60	Wirt	787.48
4	Calhoun	643.71	Braxton	160.89	Calhoun	769.43
5	Monroe	613.09	Barbour	153.05	Braxton	764.77
6	Ritchie	611.88	Doddridge	146.93	Barbour	753.87
7	Hardy	605.30	Lewis	141.09	Ritchie	751.31
8	Braxton	603.88	Ritchie	139.43	Monroe	744.71
9	Mercer	602.26	Wirt	138.93	Hardy	741.71
10	Barbour	600.82	Hardy	136.41	Doddridge	729.96
11	Summers	599.66	Taylor	133.17	Mercer	726.06
12	Logan	594.55	Monroe	131.62	Pleasants	717.43
13	McDowell	593.86	Greenbrier	131.19	Greenbrier	712.54
14	Pleasants	588.33	Gilmer	129.85	Webster	711.19
15	Webster	587.91	Morgan	129.38	Summers	710.59
16	Wayne	585.07	Pleasants	129.10	McDowell	707.48
17	Doddridge	583.03	Roane	128.15	Roane	700.22
18	Greenbrier	581.35	Kanawha	126.34	Jefferson	697.89
19	Lincoln	579.39	Hampshire	125.93	Lewis	696.20
20	Raleigh	578.95	Monongalia	125.74	Morgan	695.48
21	Jefferson	577.61	Calhoun	125.72	Logan	694.68
22	Wyoming	573.82	Mercer	123.80	Lincoln	688.90
23	Cabell	573.29	Webster	123.28	Wayne	688.08
24	Roane	572.07	Tucker	120.46	Cabell	686.49
25	Mason	570.64	Jefferson	120.28	Mason	686.32
26	Tyler	567.33	Wood	120.23	Boone	686.00
27	Mingo	567.12	Boone	120.04	Tucker	685.14
28	Fayette	567.02	Upshur	119.10	Mingo	684.89
29	Morgan	566.10	Mingo	117.77	Raleigh	684.47
30	Boone	565.96	Preston	117.60	Tyler	683.51
31	Preston	565.00	Brooke	116.55	Preston	682.60
32	Tucker	564.68	Tyler	116.18	Wyoming	681.41
33	Clay	563.33	Nicholas	115.92	Taylor	680.22
34	Mineral	560.85	Clay	115.71	Clay	679.04
35	Randolph	556.55	Mason	115.68	Upshur	675.32

## APPENDIX F - Continued

Foundation State Aid			Supplements Outside Of Formula*		Total (1) + (2)	
(1)			(2)		(3)	
36	Nicholas	556.41	Hancock	113.96	Fayette	673.45
37	Upshur	556.22	McDowell	113.62	Nicholas	672.33
38	Lewis	555.11	Cabell	113.20	Wood	671.63
39	Wood	551.40	Marion	111.29	Hampshire	671.26
40	Brooke	550.51	Summers	110.93	Kanawha	670.36
41	Taylor	547.05	Marshall	110.42	Mineral	669.63
42	Hampshire	545.33	Lincoln	109.51	Gilmer	668.20
43	Kanawha	544.02	Mineral	108.78	Brooke	667.06
44	Gilmer	538.35	Wyoming	107.59	Randolph	656.00
45	Jackson	532.46	Ohio	106.92	Monongalia	650.42
46	Wetzel	528.64	Jackson	106.91	Jackson	639.37
47	Marion	527.59	Fayette	106.43	Marion	638.88
48	Monongalia	524.68	Wetzel	106.37	Wetzel	635.01
49	Berkeley	524.00	Raleigh	105.52	Hancock	630.97
50	Hancock	517.01	Wayne	103.01	Berkeley	626.68
51	Ohio	512.61	Berkeley	102.68	Ohio	619.53
52	Harrison	490.87	Harrison	102.14	Marshall	599.71
53	Marshall	489.29	Logan	100.13	Harrison	593.01
54	Putnam	466.54	Randolph	99.45	Grant	573.23
55	Grant	379.90	Putnam	91.63	Putnam	558.17
		\$556.40		\$117.00		\$673.40

Note. \*Early Childhood Aides, \$1,200 teacher salary, service personnel \$11,500,000 (April), \$9,373,008 (July).

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vacated 390 Mich. 389 212 N.W.2d 711 (1973).
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West Virginia Code

18-2-17 through 21

18-9-7

18-9A-4

18-9A-5

18-9A-6

18-9A-7

18-9A-8

18-9A-9

18-9A-10

18-9A-15

18-10-5 and 8

18-20-1 through 5

West Virginia Constitution

Article XII, Section 1

Article XII, Section 2

Article XII, Section 4

Article XII, Section 6

## BIOGRAPHICAL SKETCH

Michael Kurt Bookman was born October 28, 1946, in Youngstown, Ohio. Upon completion of high school in 1964, he entered the University of Miami, Coral Gables, Florida, where he received a Bachelor of Business Administration in accounting and finance.

After graduation from college, Mr. Bookman taught elementary level students in the Dade County School System in Miami, Florida. During this period he attended the University of Miami and Florida Atlantic University on a part-time basis. This culminated in a Master of Education degree from Florida Atlantic University, Boca Raton, Florida, in educational administration and supervision in 1972.

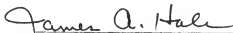
From 1972 to 1976 he was on the Northwest Area Superintendents Staff in Dade County as an Area Resource Specialist in curriculum and pupil personnel services. During that time he helped in the development of material, and training of personnel in his curriculum area, and has written many guides for the school system and a publication for the Florida State Department.

In 1974, Mr. Bookman was selected for an EPDA program, in a cooperative venture by the Dade County School System and the University of Florida. During this time he served a management internship with the Dade County Assistant Superintendent of Personnel, and received an Educational Specialist degree in educational administration and supervision from the University of Florida in 1976.

For the past year Mr. Bookman has been a research assistant for the Institute of Educational Finance at the University of Florida where his activities included data collection and analysis of cost studies in other states relative to vocational education, a state-wide cost study for the state of West Virginia, preparation of proposals, and editorial assistant for the Journal of Education Finance.

Mr. Bookman is married to Kay E. Bookman and has a six-year-old son, Brad.

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.



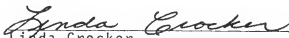
James A. Hale, Chairman  
Associate Professor of Education

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.



Kern Alexander  
Professor of Education

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.



Linda Crocker  
Assistant Professor of Education

This dissertation was submitted to the Graduate Faculty of the Department of Educational Administration and Supervision in the College of Education and to the Graduate Council, and was accepted as partial fulfillment of the requirements for the degree of Doctor of Philosophy.

August, 1977

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